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CONTENTS

S. No.	TITLE	Page No.
DRDO News		1-8
DRDO Technology News		1-8
1.	At least half of the 123 Tejas fighters ordered by the IAF to have India-made fire control radar	1
2.	How did India manage to build an advanced fighter jet like the Tejas?	2
3.	Govt approves 'Hunter Killers' for the Indian Army; Emergency orders placed for M4 armoured vehicles	4
4.	India's Defense Space Agency hunting for new technology that can track enemy assets	6
5.	सभी आईआईटी, इसरो, डीआरडीओ और बायोसाइंस लैब मिलकर करेंगे रिसर्च	7
6.	MHA orders closure of two Covid-19 centres as cases drop	8
Defence News		9-22
Defence Strategic National/International		9-22
7.	Rear Admiral Ajay Kochhar assumes Command of the Western Fleet (FOCWF)	9
8.	Augmented Reality Head Mounted Display (ARHMD) system for Indian Army under Aatmanirbhar Bharat Abhiyaan	10
9.	Contract signing with M/S Secon, Visakhapatnam for acquisition of eight missile cum ammunition barge for Indian Navy	11
10.	भारतीय नौसेना के लिए आठ मिसाइल सह गोला बारूद नौकाओं की खरीद हेतु मैसर्स सीकोन, विशाखापट्टनम के साथ अनुबंध पर हस्ताक्षर	11
11.	We have strategies for Depsang... trust deficit exists: Army Chief	12
12.	China achieves objectives without firing bullet but this won't work with India: Army Chief Gen Naravane	14
13.	भारतीय वायुसेना प्रमुख RKS भदौरिया को बांग्लादेश ने दिया बड़ा सम्मान, मीरपुर हॉल ऑफ फेम में किया शामिल	15
14.	Separate budget for domestic defence purchases requires more clarity	16
15.	Army in process of acquiring 556 Augmented Reality Head Mounted Display systems	18
16.	Sonam Wangchuk makes mobile solar-powered tent for Indian Army	19
17.	World's first solar heated tent for Indian Army by Sonam Wangchuk: Features, significance, benefits and uses	20
18.	Army likely to start using SAI for internal communications from April 1	21
Science & Technology News		22-28
19.	Researchers produce beams of entangled atoms	22
20.	Quantum shuttle to quantum processor made in Germany launched	24
21.	Nature's funhouse mirror: Understanding asymmetry in the proton	26
COVID-19 Research News		28
22.	Research finds wearing glasses may reduce chances of catching COVID-19	28

At least half of the 123 Tejas fighters ordered by the IAF to have India-made fire control radar

At least half of the 123 Tejas fighters ordered by the IAF to have India-made fire control radar

By Ravi Sharma

For long India's indigenous light combat aircraft (LCA), Tejas, programme has been criticised, even mocked, because of its over-reliance and dependency on imported equipment, most notably an American engine and an Israeli radar. While the Tejas will still have to be powered by versions of the American GE F404 engine, there is good news as far as the airborne fire control radar is concerned. 'Uttam', the Active Electronically Scanned Array (AESA) multi-mode, solid state phased array radar, now under development by the Electronics and Radar Development Establishment (LRDE), a laboratory of the Defence Research and Development Organisation, is all set to replace the Israeli Elta radar on at least half of the 123 Tejas fighters the Indian Air Force (IAF) has ordered.

The Uttam radar system will not only be a big boost to India's indigenous defence technology capabilities but will also catapult India into the list of nations that possess the crucial airborne fire control radar technology. Uttam will also be a tad less expensive than the Israeli radars that are currently fitted on the Tejas and, according to sources, cost around Rs.20 crore a piece. Uttam has several advanced features, including the capability of tracking 100 targets simultaneously, while the Elta is capable of tracking 64 targets at a time. Uttam is also capable of taking high resolution photographs aiding in reconnaissance missions. It is designed specifically to provide information to a fire-control system so that incoming targets can be tracked and weapons can be directed towards a target. The major players in the market for airborne fire control radars include Lockheed Martin Corporation, Northrop Grumman Corporation, Saab AB, Israel Aerospace Industries Ltd., Raytheon Company, General Dynamics Corporation, Leonardo, BAE Systems PLC and Airbus Group.



Development of Uttam started in 2008, with the LRDE for long periods unable to keep pace with the exacting air staff qualitative requirements of the IAF. However, the LRDE has confirmed that Uttam has completed more than 200 hours of flying tests on a hired executive jet (where air-to-air, air-to-sea and air-to-ground modes were tested) and nearly 30 hours on Tejas test platforms. Officials from the LRDE told *Frontline* during the recently held Aero India show that Uttam was capable of helping launch weapon systems that were commensurate with a BVR (beyond visual range) weapon system and also beyond that range. Sub-mode functionalities of the radar had also been tested. What was awaited was joint evaluation and, thereafter, user evaluation and the navigation terrain avoidance, weather mode testing.

In recent months, the LRDE, in tandem with Hindustan Aeronautics Limited (HAL), which manufactures Tejas, had begun integrating Uttam on two Tejas fighters, LSP2 and LSP3. Following the success of the flight trails, DRDO signed a memorandum of understanding with HAL for the manufacture and deployment of the Uttam on the Tejas fighters. According to sources, at least half of the 123 LCA Tejas fighters.

<https://frontline.thehindu.com/dispatches/at-least-half-of-the-123-tejas-fighters-ordered-by-the-iaf-to-have-india-made-fire-control-radar/article33919219.ece>

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Thu, 25 Feb 2021

How did India manage to build an advanced fighter jet like the Tejas?

When it comes to sensitive industries like defense, democracy and the rule of law do matter

By Salvatore Babones

- *India's blossoming military technology relationships with Western countries and companies go much deeper than mere acquisitions.*

India's biennial military aircraft show, Aero India, went off without a hitch in early February in the southern Indian tech capital of Bengaluru. Despite the travails of pandemic-era traveling, the United States sent a deputy undersecretary, a Navy admiral, and three Air Force generals. It also sent a nuclear-capable B-1B bomber. But the real star of the show was what escorted the U.S. aircraft in the sky: an Indian-built Tejas fighter jet. With a name that means "radiant" in the ancient Sanskrit language, the Tejas is the first supersonic multirole fighter aircraft designed and built entirely in India.

How has a relatively poor country like India that is more famous for call centers than for precision manufacturing managed such a dramatic technological leap? In a word: cooperation. India is keen to build defense-industry partnerships with more advanced countries, and—even more importantly—advanced countries are keen to partner with India. Not only does it have one of the world's largest military procurement budgets and a large pool of talented engineers, but India also has a strong tradition of rule of law that protects

intellectual property and ensures the enforceability of contracts—in stark contrast to China, which is fast losing access to many advanced Western technologies. That makes India a better partner for international technology companies that it, for now, still depends on.

With the Tejas, India joins an elite group of countries that have demonstrated the capacity to develop and manufacture so-called fourth-generation fighters: combat aircraft characterized by electronic fly-by-wire control systems, onboard situation awareness displays, and over-the-horizon strike capabilities. The United States led the way in the late 1970s with the dual-engine F-15 and single-engine F-16, while China began producing similar fourth-generation fighters only in the early 2000s. With the F-22 and F-35, the United States has since begun to produce fifth-generation fighters—adding stealth capacity among other advances—while other countries, including India, are eager to catch up.



Indian Air Force Tejas fighter jets perform at the Aero India air show at Yelahanka Air Force Station in Bengaluru, on Feb. 3. JEWEL SAMAD/AFP VIA GETTY IMAGES

The Tejas is a flagship project of the government's Atmanirbhar Bharat or Self-Reliant India program. So far, India's defense industry isn't nearly as self-reliant as the government might like it to be, and the Tejas—assembled by India's state-owned Hindustan Aeronautics in Bengaluru—is a good example: The government estimates that the fighter is just 60 percent Indian by value, though that figure is expected to rise over time. The biggest-ticket foreign components are the plane's General Electric F404 jet engine and Israel Aerospace Industries' radar and electronic warfare systems. Take away these key components, and all you have is an empty airframe.

For India, that's not a problem: As a democratic country that honors contracts and respects intellectual property law, it is able to buy advanced technology that it cannot produce itself. That gives the country a major advantage over its regional rivals, China and Pakistan, which simply are not trusted by their suppliers. China's jet fighter development programs have been repeatedly held back by Russia's unwillingness to supply high-performance engines for fear of Chinese reverse-engineering. And key components of Pakistan's locally manufactured JF-17 are entirely sourced from China, as is the design.

India, in contrast to both China and Pakistan, was spoiled for its ability to choose where it received advanced components for its Tejas fighter. When it ran into trouble developing its own homegrown Kaveri engine for the plane, it received offers of assistance from Russian, French, and British firms, in addition to the United States' General Electric. It was the same with avionics: French and Swedish suppliers were miffed that they lost the contracts for radar and electronic warfare equipment to Israel. Everyone seems to want in on the Indian market, and that gives India enormous leverage over suppliers to acquire the best equipment in the world—at the best prices.

And under the best terms for technology transfer too. These days, no one is keen to help China continue its climb up the military technology ladder. But the United States, Russia, Israel, and multiple European Union countries are falling over themselves to establish local production partnerships for armaments in India. France, having lost out on the Tejas engine and avionics contracts, has agreed to establish local production lines for the Panther helicopters and Rafale jet fighters that it is supplying to the Indian Armed Forces. U.S. aerospace majors Boeing and Lockheed Martin also have joint production agreements with Indian partners.

India is not a Western ally—and indeed, its largest arms supplier has historically been Russia. In addition to reaching out to Western defense contractors, India has also requested joint ventures with Russian partners, though with limited success. Russia prefers to sell complete weapons systems, such as the S-400 anti-aircraft missiles that have caused so much tension in U.S.-Indian relations. Russia is itself a low-cost supplier, so it sees little benefit in establishing an offshore production base in India. Western sanctions also make it difficult for Russia to work with India on anything but a cash-and-carry basis.

India's blossoming military technology relationships with Western countries and companies go much deeper than mere acquisitions. Under the Self-Reliant India program, India is leveraging its buying power into production partnerships. Just as the East Asian tiger economies once used local content targets to strategically claw their way up technology value chains, India is pushing its defense suppliers first to move assembly to India and then to build local subcontracting networks for components. The fact that defense procurement is specifically excluded from World Trade Organization rules makes this easier for military hardware than for other manufactured goods.

<https://foreignpolicy.com/2021/02/24/india-tejas-advanced-fighter-jet-defense-industry-intellectual-property-china/>

Thu, 25 Feb 2021

Govt approves 'Hunter Killers' for the Indian Army; Emergency orders placed for M4 armoured vehicles

On Tuesday (February 23, 2021) the Defence Acquisition Council (DAC) headed by defence minister Rajnath Singh gave its approval to the Indian Army's proposal to buy 118 Arjun Mark 1-A 'Hunter Killers'.

By Huma Siddiqui

Indian Army will soon have 118 indigenous Arjun Mk-1A Main Battle Tanks in its fleet. On Tuesday (February 23, 2021) the Defence Acquisition Council (DAC) headed by defence minister Rajnath Singh gave its approval to the Indian Army's proposal to buy 118 Arjun Mark 1-A 'Hunter Killers'. According to sources, the Indian Army will soon issue the Request for Proposal (RFP) to the Defence Research and Development Organisation (DRDO), for 118 Arjun Mk-1A Main Battle Tanks. It will be at least a year before the process is finalized and the contract is inked.

This will be the second biggest contract for the indigenously manufactured platforms for the Indian Armed Forces this year. The first was the recently signed deal for 83 Light Combat Aircraft 'Tejas' between Hindustan Aeronautics Limited (HAL) and Ministry of Defence for the Indian Air Force (IAF).

What was announced?

The proposal worth Rs 8,380-crore for the Indian Army was given the Acceptance of Necessity (AoN) by the DAC.

According to the statement which puts the three AoNs in the highest priority category of defence acquisition, it states, "Three AoNs for an overall cost of Rs 13,700 crore were accorded. And, these will be indigenously designed, developed and manufactured."

Though no specific platforms were mentioned in the official statement, according to sources, the approvals are for 118 main battle tanks, and equipping the armoured fighting vehicles (AFVs) with modern protection and countermeasure systems.

The protection systems for the army's fleet of more than 3,000 AFVs (tanks and infantry combat vehicles) is expected to cost around Rs 5,300 crore.

The order for the MBT 'Arjun' is expected to be placed with the Ordnance Factory Board (OFB) soon. And once the deal is firmed up around five tanks are expected to be rolled out in 30 months and thereafter 30 tanks every year.

More about the 118 indigenous Arjun Mk-1A Main Battle Tanks

The approval was given for Arjun Mk-1A MBT, which is an upgraded version of the Arjun Mk-1 which the Indian Army is using presently.

The new version of the Arjun will come with 71 upgrades, including 14 major improvements.

These upgrades are expected to significantly improve not only the tank's lethality, also its mobility and survivability.

Also, according to a senior officer, the new variant of the tank will have better firepower; advanced land navigation systems and improved night vision capabilities.



Once the deal is inked almost 200 companies are expected to be part of this huge project and around 8,000 jobs are going to be created.

There will also be other features including the advanced laser warning and countermeasure systems, and containerized ammunition bin.

The tanks are going to be manufactured at the OFB's Heavy Vehicles Factory at Avadi, Chennai. This tank has been designed and developed by the Defence Research and Development Organisation's Chennai-based Combat Vehicles Research and Development Establishment (CVRDE).

Last week, Prime Minister Narendra Modi had handed over a prototype of the Arjun Mk-1A tank to the Indian Army Chief General MM Naravane in Chennai. This had undergone tests across the Western Sector and covered almost 6000 km as well as another round of 1,500 km of intense testing.

Atmanirbhar Bharat in Defence

Once the deal is inked almost 200 companies are expected to be part of this huge project and around 8,000 jobs are going to be created.

There are T-90, T-72 and the Arjun Mk-1 tanks in the Indian Army's fleets.

This will be the last order for the MBT Arjun as the Indian Army is keen on getting lighter tanks.

Protection and countermeasure systems for its AFVs

These help in enhancing the survivability of AFVs and protect them against the threats from missiles, rocket-propelled grenades and tank ammunition.

The upgrades will help in boosting the fighting potential of the Indian Army.

Emergency procurement order placed for M4 armoured vehicles for the Indian Army

Besides the Main Battle Tank 'Arjun' Mk-1A tanks, on Tuesday (February 23, 2021) orders emergency order was placed by the Indian Army for the procurement of M4 armoured vehicles.

These vehicles as has been reported earlier have undergone intensive tests in Ladakh during the standoff with China in 2020. These vehicles are going to be purchased from Pune-based private sector company Bharat Forge of the Kalyani group.

An official company statement shared with the media on Tuesday, stated clearly that it had "An order worth Rs 177.95 crore has been received from the Indian Ministry of Defence (MoD) for the supply of Kalyani M4 vehicles".

What are these vehicles used for?

According to a former Indian Army officer, such wheeled armoured vehicles are required for transporting troops and have the capability of being operated in high altitudes.

The Indian Army has placed an emergency order as it needs these wheeled armoured vehicles on urgent basis for its inventory.

Capabilities of Kalyani M4

These armoured vehicles which have undergone intensive trials in high altitudes along with other competitors come with certain extra features as compared to the regular vehicles.

These vehicles are going to be built at the Pune based facility and have been designed to meet the complex requirements of the Indian Armed Forces.

It is a multi-role platform, and has the capability of quick mobility in rough terrain and those areas which are affected by IED & mine threats.

According to the company, this vehicle has ballistic and blast protection from up to 50 kg TNT side blast, or IED or roadside bombs, all because of the design.

It is built on a flat-floor monocoque hull and has a thrust speed of 140 km per hour.

With a payload of 2.3 tonnes, it can operate in a range of about 800 km.

The original product is from South African Paramount Group, whose M4 has been modified as per the Indian conditions and requirements of the end user by Bharat Forge.

This was possible because of a deal between the two companies to pool in their expertise, share technology and capabilities for manufacturing armoured vehicles in India, under the 'Make in India' initiative.

<https://www.financialexpress.com/defence/govt-approves-hunter-killers-for-the-indian-army-emergency-orders-placed-for-m4-armoured-vehicles/2200740/>



Thu, 25 Feb 2021

India's Defense Space Agency hunting for new technology that can track enemy assets

India's Defence Space Agency (DSA) is looking for technology to deal with threats in and from space, according to reports. The DSA was formed in mid-2019 following the nod from the ministry of defense

By Aakriti Sharma

According to *The Times of India*, the DSA has invited proposals from companies on technologies providing space situational awareness solutions, which can “detect, identify and track enemy assets while also warning about any impending attacks”.

The agency has been in talks with different companies to procure the said technology since 2020 but the RFI (request for information) was issued in January 2021, the TOI report said. The companies have to respond by March to the RFI.

The agency is looking for a system that can be enhanced to play an offensive role in the future. It has to be a fusion of space surveillance data available from various sources into a common operating picture (COP) to better evaluate threats and to maximize the effectiveness of Indian operations in space, land, sea, and air domains.

The RFI mentions that DSA is looking for a technology, which can perform tasks on 'neighborhood watch screenings' and analysis. The neighborhood watch is a program, which provides a detailed perspective on space activities.

The technology required should be able to predict threats from anti-satellite weapons (ASAT), space debris, direct energy weapons, and radio frequency interference.

Apart from modernizing the military on land, air, and water, it has become vital to prepare for defense in space. Experts have pointed out that with countries like the US, China, Russia setting up arms separate military wings for space warfare, India should also step up efforts in that direction.

In 2019, India had conducted an anti-satellite weapon test, code-named 'Mission Shakti'. The program that included a missile-based system to attack moving satellites was jointly undertaken by the Defence Research and Development Organisation (DRDO) and the Indian Space Research Organisation (ISRO), the Anti-satellite (ASAT) System.

Even though the test was criticized by US space agency NASA, India had undertaken the mission to showcase its capabilities in space defense. China and the US have already conducted such test missions.

China has been acquiring technologies to strengthen its space capabilities to limit or prevent an adversary's use of space-based assets during crisis or conflict.



The People's Liberation Army has been acquiring and developing technologies including kinetic-kill missiles, ground-based lasers, and orbiting space robots, as well as expanding space surveillance capabilities, which can monitor objects in space within their field of view and enable actions.

It is also undertaking the production of electronic warfare capabilities such as satellite jammers, offensive cyber capabilities, and directed-energy weapons.

<https://eurasianimes.com/india-steps-up-space-warfare-program-begins-hunt-for-new-technology/>

अमर उजाला

Thu, 25 Feb 2021

सभी आईआईटी, इसरो, डीआरडीओ और बायोसाइंस लैब मिलकर करेंगे रिसर्च

सीमा शर्मा

अब देश के सभी आईआईटी, इसरो, डीआरडीओ और बायोसाइंस लैब मिलकर रिसर्च और दिक्कतों के समाधान पर एक साथ काम करेंगी। आत्मनिर्भर भारत अभियान के तहत सरकार ने इस प्रोजेक्ट को मंजूरी दे दी है।

भारतीय इंजीनियर, डॉक्टर और वैज्ञानिक मिलकर कोविड-19 जैसी वैश्विक महामारी की रोकथाम पर रिसर्च, वैक्सीन और दवा इजाद करने पर ही काम नहीं करेंगे, बल्कि भविष्य में भारत सैन्य और अंतरिक्ष मामलों में दूसरे देशों से तकनीक और उपकरण खरीदने की बजाय निर्माण पर जोर देगा।



प्रतीकात्मक तस्वीर - फोटो : Pixabay

आत्मनिर्भर भारत: वैश्विक महामारी, सैन्य, अंतरिक्ष जैसे क्षेत्रों में रिसर्च और तकनीक पर डॉक्टर, इंजीनियर व वैज्ञानिक मिलकर करेंगे काम

वैश्विक महामारी कोविड-19 के चलते भारत पहली बार आत्मनिर्भर भारत बनने की राह की ओर अग्रसर है। महामारी के दौरान आईआईटी के वैज्ञानिक और इंजीनियर ने मिलकर देश को सस्ती आरटीपीसीआर किट(कोरोना जांच किट), मॉस्क, पीपीई किट आदि बनाकर दी।

आईआईटी के इन प्रोजेक्ट की भारत के साथ अंतरराष्ट्रीय मार्केट में भी खासी मांग है। इसी को देखते हुए अब आईआईटी लैब और इसरो, डीआरडीओ और बायोसाइंस लैब से जोड़ने की योजना तैयार की गई है।

शोध और तकनीक पर मिलकर होगा काम

डॉक्टर, वैज्ञानिक और इंजीनियर अपनी-अपनी लैब में विभिन्न प्रोजेक्ट पर अभी काम करते हैं। हालांकि जब तक प्रोजेक्ट पूरा या सफल नहीं होता है, उसकी जानकारी लैब से बाहर नहीं आ पाती है।

पर अब देश और समाज की दिक्कतों के समाधान के विभिन्न प्रोजेक्ट में सब लैब एक-दूसरे से जुड़ी होगी। इसमें कोई भी वैज्ञानिक किसी भी क्षेत्र के रिसर्च और तकनीक के बारे में अपने आइडिया दे सकेगा। इससे भारत रिसर्च और तकनीक के क्षेत्र में मजबूत होगा। उसे दूसरे देशों पर निर्भरता कम होगी।

रोजगार को बढ़ावा तो प्रतिभाओं का पलायन रुकेगा:

आईआईटी, इसरो, डीआरडीओ और बायोसाइंस लैब में काम करने वाले वैज्ञानिक फिलहाल सुविधाओं की कमी और रिसर्च में कोई खास योजना न होने के कारण विदेशों की ओर रुख करते हैं।

इससे भारती प्रतिभाएं बाहर चली जाती हैं। इस योजना से अब इन प्रतिभाओं के पलायन को रोकने में मदद मिलेगी। देश में ही उन्हें रोजगार के बेहतर अवसर मुहैया होंगे।

केंद्रीय बजट में किया गया प्रावधान

नई शिक्षा नीति 2020 और केंद्रीय बजट में इसका प्रावधान किया गया है। इसका मकसद देश और समाज को भविष्य की दिक्कतों से बचाने के लिए रिसर्च पर विशेष योजनाएं तैयार की ई है। इसके लिए सरकार विशेष फंड भी देगी।

<https://www.amarujala.com/india-news/all-indian-iits-isro-drdo-and-bioscience-labs-will-jointly-research-and-solve-problems>



Thu, 25 Feb 2021

MHA orders closure of two Covid-19 centres as cases drop

The two facilities will be closed in phases and those admitted will be discharged gradually and no new admissions will be made now, a senior home ministry official said

New Delhi: The Centre has ordered a phased closure of two special and temporary Covidcare centres in the city in view of “continuous decline” in coronavirus cases. The Ministry of Home Affairs (MHA) has issued a directive asking the Defence Research and Development Organisation (DRDO) to “close down” the facility run by it and directed the Armed Forces Medical Services (AFMS) to withdraw their health professionals manning the centre, and ordered the same with “immediate effect” to the ITBP for the Chhattarpur facility.

The DRDO facility called the Sardar Vallabh Bhai Patel COVID hospital is located in the Delhi Cantonment. The two facilities will be closed in phases and those admitted will be discharged gradually and no new admissions will be made now, a senior home ministry official said.

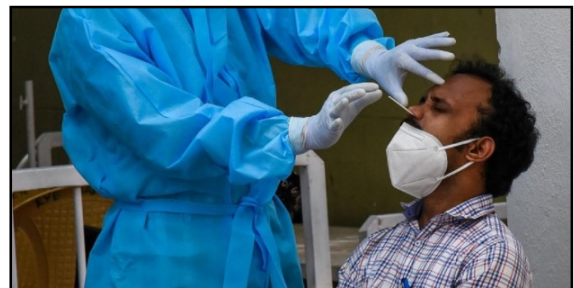
The decision was taken by Union Home secretary Ajay Bhalla after he chaired a review meeting of the Covid-19 situation along with officials of the Ministry of Health and Family Welfare, AFMS, ITBP and the DRDO. The two temporary facilities

were set up in June-July last year as Delhi was witnessing a spike in Covid-19 cases in the middle of last year.

Home Ministry officials said the two centres are being closed “due to continuous decline” in the number of cases in the National Capital Territory of Delhi vis-a-vis adequate availability of medical facilities. According to the data of Monday, Delhi recorded 128 new Covid cases and one death and the positivity rate stood at 0.30 per cent.

The Chhattarpur centre, which was also called the world’s largest Covidcare centre with over 10,000 beds, has no patients in critical care at present, while about 60 patients are admitted in the ward, the official data said.

<https://www.newindianexpress.com/cities/delhi/2021/feb/24/mha-orders-closure-of-two-covid-19-centres-as-cases-drop-2268260.html>



A health worker collects a swab sample from a man to test for the Covid-19 coronavirus. (Photo| M K Ashok Kumar, EPS)



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Ministry of Defence

Wed, 24 Feb 2021 7:34PM

Rear Admiral Ajay Kochhar assumes Command of the Western Fleet (FOCWF)

Rear Admiral Ajay Kochhar, NM took over as the Flag Officer Commanding Western Fleet (FOCWF) from Rear Admiral Krishna Swaminathan, AVSM, VSM at a formal ceremony held onboard the aircraft carrier INS Vikramaditya on 24 Feb 21.

Rear Admiral Ajay Kochhar, a specialist in Gunnery and Missile Warfare, was commissioned into the Indian Navy on 01 Jul 1988. In a career spanning 32 years, he has commanded five warships on both the Western and Eastern seaboard including the aircraft carrier, INS Vikramaditya. On promotion to the Flag Rank he assumed charge as Assistant Controller of Carrier Projects & Assistant Controller of Warships Production & Acquisition overseeing all aspects related to construction and acquisition of warships for the Indian Navy both from Indian as well as foreign shipyards including the indigenous aircraft carrier.



<https://pib.gov.in/PressReleasePage.aspx?PRID=1700554>



**Press Information Bureau
Government of India**

Ministry of Defence

Wed, 24 Feb 2021 3:21PM

Augmented Reality Head Mounted Display (ARHMD) system for Indian Army under Aatmanirbhar Bharat Abhiyaan

Augmented Reality Head Mounted Display (ARHMD) System is conceived as a capability enhancement to Land Based Air Defence Weapon Systems such as IGLA shoulder fired Infra Red Homing Air Defence Missile System and ZU 23mm 2B AD Gun System which will provide the operator with radar and Thermal Imaging (TI) sight outputs as overlays. The proposed system intends to enhance the engagement capability during night and conditions of inclement weather and the day-time engagements are also intended to be enhanced through increased reaction times, data computation for decision support and integration of output of TI sight.

Indian Army is in the process of acquiring niche technology by procuring quantity 556 Augmented Reality Head Mounted Display (ARHMD) Systems under Make-II Category. After successful evaluation of vendor responses, Project Sanction Order (PSO) has been issued on 22 February 2021 to six vendors to start developing the prototype. The contract will be placed with one of the firms post successful development of prototype as per provisions of Buy (Indian-IDDMM) category of DAP 2020.

Development of Augmented Reality Head Mounted Display System under Make-II will be a game changer for Indian Army. It will be in sync with “Atmanirbhar Bharat” policy of the Government and will lead to “Self Reliance” by giving boost to the Indian Defence Industry.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1700423>



Press Information Bureau
Government of India

Ministry of Defence

Wed, 24 Feb 2021 6:24PM

Contract signing with M/S Secon, Visakhapatnam for acquisition of eight missile cum ammunition barges for Indian Navy

A contract for construction of Eight Missile Cum Ammunition Barges (MCA) has been concluded with M/s SECON, Visakhapatnam a MSME on 19 February 2021. Delivery of Barges is scheduled to commence from Jul 22. The Missile Cum Ammunition Barges will be inducted in Indian Navy to undertake the mission needs for embarking/disembarking Missile, Gunnery and ASW Ammunition. The project adds another milestone to the Make in India initiative of the Government of India.



<https://pib.gov.in/PressReleasePage.aspx?PRID=1700508>



पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Wed, 24 Feb 2021 6:24PM

भारतीय नौसेना के लिए आठ मिसाइल सह गोला बारूद नौकाओं की खरीद हेतु मैसर्स सीकोन, विशाखापट्टनम के साथ अनुबंध पर हस्ताक्षर

मैसर्स सीकोन (एसईसीओएन), विशाखापट्टनम के साथ 19 फरवरी 2021 को भारतीय नौसेना ने आठ मिसाइल सह गोला बारूद वाली नौकाओं के निर्माण के लिए अनुबंध पर हस्ताक्षर किए हैं। इन नौकाओं की डिलिवरी 22 जुलाई से शुरू होने वाली है। इन नौकाओं का इस्तेमाल किसी भी मिशन पर मिसाइलों को लाने- ले जाने और गोला-बारूद की जरूरतों को पूरा करने के लिए किया जाएगा। परियोजना भारत सरकार की 'मेक इन इंडिया' पहल में एक और मील का पत्थर साबित होगी।

<https://pib.gov.in/PressReleasePage.aspx?PRID=1700594>

We have strategies for Depsang... trust deficit exists: Army Chief

The Army chief said China's "habit of creeping power" and its strategy in the South China Sea, of achieving its objectives without firing shots, would not work with India

By Deeptiman Tiwary

New Delhi: Describing the disengagement of Chinese and Indian troops at [Pangong Tso](#) in Ladakh as “a win-win situation... a very good outcome” where “both sides should feel they have achieved something,” Army chief General MM Naravane Wednesday said “we have our strategies in place” to resolve “some issues that remain such as the area of Depsang... and pending issues in other areas along our northern borders”.

Acknowledging there is a “trust deficit” between the two sides, General Naravane said: “We still have a long way to go. We now have to move on to the stage of de-escalation. And after that, moving back of the troops and the de-induction of the troops which went to the higher reaches... We have to be wary... we will be very cautious... there is a trust deficit... unless that trust deficit is removed, we will, of course, continue to be wary, keep watching whatever movements happen on either side of the LAC. But I think at the end of the day, we have achieved a lot.”



Army Chief Gen. M M Naravane. (Express Photo/File)

He made these remarks while responding to questions during a webinar organised by the Vivekananda International Foundation (VIF).

The Army chief said China's “habit of creeping power” and its strategy in the South China Sea, of achieving its objectives without firing shots, would not work with India.

“China has been in the habit of creeping power, making very small, incremental changes wherein each change by itself was not very big or worthy of a very strong reaction. And because of these small, incremental moves which were never contested, it has been able to achieve its aims without firing a shot or without any loss of life. And what has happened in the South China Sea is a very glaring example of that. I think more than anything else, what we have achieved is to show that this strategy will not work with us. And every move will be met resolutely,” he said.

Asked what leverage India had to negotiate with the Chinese especially on [Depsang Plains](#) after vacating the heights south of Pangong Tso – on the Depsang Plains in the far north, close to the strategic Indian base at Daulat Beg Oldie near the Karakoram Pass, Chinese troops have been blocking Indian soldiers at a place called the Bottleneck, preventing them from accessing their traditional patrolling points – the Army chief said: “Going forward, there are some issues that remain such as Depsang. There are pending issues in eastern Ladakh and in other areas along our northern borders. But we have our strategies in place for that. Do we have anything to negotiate in the future? Yes, definitely. But I would not like to say what those strategies would be to further progress our negotiations to get a favourable outcome.”

To a query on whether there was a threat of China taking the heights that India had vacated, he said: “The entire disengagement agreement, or any other agreement, is premised on the fact that it will be observed in letter and spirit. We will trust, but we will verify. We have put our systems in place to make sure that there is no re-occupation of these heights. We can only hope that PLA and China adhere to this agreement in toto.”

He said the disengagement at Pangong Tso was achieved because of the “whole-of-government” approach in which negotiations were made at political, diplomatic and military levels.

On the question of China opening a two-front war against India in collusion with Pakistan, General Naravane said: “There were no overt signs of any such collusion. Whatever they were doing, they continued doing. There were no large-scale mobilisations or any such activity which would be suggestive of any kind of help being given by one to the other.”

He, however, said that in the military’s long term strategy, Indian Army factors a two-and-a-half front war, with the half being internal security.

“These are threats in being. Whether they manifest or not, only time will tell. With the whole-of-government approach, such a worst case scenario should not be unfolding. But as a military, we are prepared,” he said.

Speaking on the internal security situation in the North-East, the Army chief said China had created an environment of confrontation and mutual distrust in India’s neighbourhood.

“The internal dynamics in the North-East are intricately linked to the regional security construct. This is characterised by rising Chinese belligerence in the Indo-Pacific, its hostility towards weaker nations and its relentless drive to create regional dependencies through debt traps like the Belt and Road Initiative. Also, the resultant Sino-US rivalry has created regional imbalances and instability. The increasing footprints of China in India’s neighbourhood and its attempt to unilaterally alter the status quo along our disputed borders have created an environment of confrontation and mutual distrust,” he said.

The Army chief suggested that unsettled borders with China had also increased India’s challenge of balancing technology with boots on the ground.

“Certain developments on the northern border should cause us to ponder over another reality. And that is the nature of our unsettled borders. And consequently, challenges with regard to our territorial integrity and sovereignty. Without doubt, there are newer threats on the horizon. But the hard reality is that the legacy challenges have not quite gone away. In fact, they have only grown in scale and intensity. So while the Indian Army will continue to prepare and adapt to the future, the more proximate and real danger on our active borders cannot be ignored. The transition from a manpower intensive army to a technology-driven army is already underway. However, in spite of these changes, the requirement of boots on the ground will remain an operational imperative. As long as we have unsettled borders, we will need boots on the ground,” he said.

The China factor, he said, had also forced India to think about speeding up indigenisation of Indian defence requirements.

“The twin challenges of Covid and the belligerence of our adversary on our northern borders have brought to the fore the vulnerability of global supply chains, underscoring the critical need for self-reliance. Today, self-reliance in defence has become a strategic necessity. It is imperative for us to invest in building long-term indigenous capabilities for application across the entire spectrum of conflict,” he said.

“Considering the quick pace of defence modernisation of our adversaries, we cannot afford to be lagging behind. Our external dependence for weapons creates vulnerabilities during times of crisis. However, in the last few years, we have tried to reverse this trend by boosting indigenisation,” he said.

<https://indianexpress.com/article/india/india-china-border-dispute-we-have-strategies-for-depsang-trust-deficit-exists-army-chief-naravane-7203493/>

China achieves objectives without firing bullet but this won't work with India: Army Chief Gen Naravane

Referring to Beijing's aggressive and expansionist moves, the Army chief said China is in the habit of creeping forward and making very small incremental changes

By Abhishek Bhalla

New Delhi: China manages to achieve its objectives without firing a bullet or losing lives as its incremental moves were not contested, but this strategy won't work against India, Army Chief Gen MM Naravane said on Wednesday.

Referring to Beijing's aggressive and expansionist moves, the Army Chief said China is in the habit of creeping forward and making very small incremental changes.

"Because of the very small incremental moves, which were never contested, China has been able to achieve its aims (territorial expansion) without firing a shot without any loss of life," Gen Naravane said.

The Army Chief was addressing a webinar organised by the Vivekanand International Foundation. He said this is a glaring example of China's moves in the South China Sea, but added that India will not allow this to happen.

Referring to India's resolve in Ladakh he said, "I think more than anything else what we have achieved is to show that this strategy will not work with us. Every such move will be met resolutely."

Calling the recent disengagement in Pangong Tso a "win-win situation", he cautioned about other areas in Eastern Ladakh.

"Going forward, there are some issues which remain which we mentioned in areas of Depsang. Defence Minister (Rajnath Singh) himself mentioned this in his update to Parliament. There are pending issues in Eastern Ladakh, besides other issues along the Line of Actual Control. We have our strategies in place for that," the Army chief said.

Praising the Indian troops for showing their grit in Ladakh during the tussle with China, he said, "We owe it to great determination of men on ground and junior leadership who struck out through a very adverse winter conditions and were willing to go that extra mile in carrying out their duties. We actually owe it all to them."

Despite the initial disengagement, the Army Chief sounded a warning while dealing with China and cited trust deficit.

"In whatever we are doing, we also keep in mind that we have to be wary. We will be very cautious and I mentioned in my talk also that there is a trust deficit. Unless that trust deficit is removed, we will of course continue to be very wary and watch whatever movement happen on either sides. But I think at the end of day we have achieved a lot," he said.

Speaking about the de-escalation process, he said there is still a long way to go. "We now have to go at a stage of de-escalation and of course, after that moving back of troops and the de-induction of troops will have to be carried out."

<https://www.indiatoday.in/india/story/china-achieves-objectives-without-firing-bullet-but-this-won-t-work-with-india-army-chief-gen-naravane-1772705-2021-02-24>



Indian Army Chief Gen MM Naravane. (Photo: PTI)

भारतीय वायुसेना प्रमुख RKS भदौरिया को बांग्लादेश ने दिया बड़ा सम्मान, मीरपुर हॉल ऑफ फेम में किया शामिल

चार दिवसीय यात्रा पर ढाका पहुंचे भारतीय वायुसेना प्रमुख राकेश कुमार सिंह भदौरिया को बांग्लादेश एयरफोर्स ने विशेष सम्मान दिया है। बांग्लादेश के डिफेंस सर्विसेज कमांड एंड स्टाफ कॉलेज (DSCSC) ने एयरचीफ मॉर्शल भदौरिया को 'मीरपुर हॉल ऑफ फेम' में शामिल किया है।

Priyesh Mishra

ढाका: चार दिवसीय यात्रा पर ढाका पहुंचे भारतीय वायुसेना प्रमुख राकेश कुमार सिंह भदौरिया को बांग्लादेश एयरफोर्स ने विशेष सम्मान दिया है। बांग्लादेश के डिफेंस सर्विसेज कमांड एंड स्टाफ कॉलेज (DSCSC) ने एयरचीफ मॉर्शल भदौरिया को 'मीरपुर हॉल ऑफ फेम' में शामिल किया है। भदौरिया ने 1997-98 में मीरपुर में इस कॉलेज से 18वें एयर स्टाफ कोर्स में हिस्सा लिया था।

बांग्लादेश थलसेना प्रमुख से की मुलाकात

बुधवार को एयरचीफ मॉर्शल भदौरिया ने बांग्लादेश के सेना प्रमुख जनरल अजीज अहमद से भी मुलाकात की। 1971 के युद्ध के दौरान और उसके बाद दोनों देशों के सशस्त्र बलों के बीच की मित्रता को लेकर बात की। इसके अलावा जनरल अजीज और एयरचीफ मॉर्शल भदौरिय द्विपक्षीय सहयोग को और मजबूत करने के तरीकों पर भी चर्चा की।

स्वदेशी डिफेंस इक्विपमेंट्स के एक्सपोर्ट पर करेंगे बात

राकेश कुमार सिंह भदौरिया अभी बांग्लादेश के कई एयरबेस का दौरा भी करने वाले हैं। इसके अलावा भदौरिया अपने इस दौर पर स्वदेशी डिफेंस इक्विपमेंट्स के एक्सपोर्ट पर भी बांग्लादेश के अधिकारियों से बात कर सकते हैं। एरो इंडिया-2021 के दौरान बांग्लादेश के वायुसेना अध्यक्ष एयर चीफ मार्शल मसीहुज्जमां सेरनियाबत भारत पहुंचे थे। उन्होंने भारत के स्वदेशी एयरक्राफ्ट तेजस में उड़ान भी भरी थी। तब ऐसी रिपोर्ट थी कि बांग्लादेश ने तेजस को खरीदने में रुचि दिखाई थी।

चीन से बढ़ रही बांग्लादेश की नजदीकी

शेख हसीना के दोबारा प्रधानमंत्री बनने के बाद बांग्लादेश के तेवर जरा बदले हैं। अब वह चीन के इन्फ्रा प्रॉजेक्ट्स को तवज्जो दे रहा है। पिछले साल बांग्लादेश ने सिलहट में एयरपोर्ट टर्मिनल का ठेका चीनी कंपनी को दे दिया। जबकि सिलहट भारत की उत्तर-पूर्व सीमा से सटा है और संवेदनशील इलाका माना जाता है। इसकी मदद से चीन भारत के पूरे नॉर्थ ईस्ट इलाके पर नजर रखने का प्लान बना रहा है।

बंगाल की खाड़ी में अपनी उपस्थिति बनाना चाहता है चीन

चीन बंगाल की खाड़ी में भारत को घेरने के लिए हर हाल में अपनी उपस्थिति बनाना चाहता है। यही कारण है कि म्यांमार में सैन्य तख्तापलट की पूरी दुनिया ने आलोचना की लेकिन, चीन ने हर कदम पर म्यांमार की सेना का पक्ष लिया। उसने संयुक्त राष्ट्र सुरक्षा परिषद और मानवाधिकार परिषद में म्यांमार



सेना की आलोचना करने वाले प्रस्ताव पर वीटो किया था। आंग सांग सू की की सरकार चीन के प्रोजेक्ट्स को मंजूरी नहीं दे रही थी, जिससे बांग्लादेश तक चीन के पहुंचने का सपना प्रभावित हो रहा था।

<https://navbharattimes.indiatimes.com/world/asian-countries/indian-air-force-chief-rks-bhadoria-inducted-in-mirpur-hall-of-fame-at-defence-services-command-and-staff-college-bangladesh/articleshow/81194861.cms>



Thu, 25 Feb 2021

Separate budget for domestic defence purchases requires more clarity

The putative capital acquisition budget is a fictional sub-set of the total capital outlay and broadly caters for procurement of aircraft and aero engines, heavy and medium vehicles, and other equipment of the three services, naval fleet/projects, and special projects of the Indian Air Force

By Amit Cowshish

At a webinar organised by the Ministry of Defence (MoD) on February 22, Defence Minister Rajnath Singh announced bifurcation of the capital procurement budget into domestic and foreign 'routes' to ensure more procurement from the domestic industry.

The Press Information Bureau's release of the even date says that the MoD plans to invest about 63% of the outlay for the Financial Year (FY) 2021-22 on domestic procurement. It works out to an impressive Rs 70,221 crore.

To put this stratagem in perspective, Finance Minister Nirmala Sitharaman had announced a slew of measures on May 16 last year to revive the pandemic-hit economy. One of these was to provide a separate budget for domestic capital procurement, apart from corporatisation of the Ordnance Factory Board, raising of the limit on Foreign Direct Investment to 74% through the automatic route, and promulgation of a negative list prohibiting import of various defence products.

She did not clarify -though it seemed highly unlikely even then- whether the funds under this category will be provided in addition to the allocation already made in the union budget for the FY 2020-21, which is what could have truly made a big impact on rejuvenating the domestic defence industry.

It, however, became clear when the union budget for the FY 2021-22 was presented on February 1 that the expectation was misplaced. The intention was not to augment the capital outlay but to parcel out a portion of that to defray expenditure on procurement from the domestic sources. The defence minister's announcement on February 22, therefore, did not come as a surprise, although it created an air of gaiety at the webinar.

Quick calculations indicate that the parcelled-out amount of Rs 70,221 crore is 63% of the 'capital acquisition', or 'modernisation' budget, of approximately Rs 1,11,462 crore, leaving Rs 41,241 crore for procurement from overseas vendors.

The putative capital acquisition budget is a fictional sub-set of the total capital outlay and broadly caters for procurement of aircraft and aero engines, heavy and medium vehicles, and other equipment of the three services, naval fleet/projects, and special projects of the Indian Air Force.

While earmarking of separate funds for procurement from the domestic sources certainly sounds encouraging, it also calls for a reality check.

Persistent inadequacy of the capital budget is no secret. The gap between the total requirement for revenue and capital expenditure projected by the armed forces and the actual budgetary

allocation has steadily widened, going up from Rs 23,014 crore in 2010-11 to Rs 1, 03,536 crore in 2020-21, of which Rs 59,417 crore was for capital expenditure; most of this is incurred on capital acquisitions.

Though the figures for the FY 2021-22 are not available yet, it will be surprising if the gap between the projected requirement and the allocation narrows down. That being the case, it is difficult to visualise how parcelling out of a segment of the inadequate budgetary allocation would 'enhance domestic procurement' as announced at the webinar.

The scepticism also arises from the fact that lately the committed liabilities -payments to be made against ongoing contracts- have been crowding out the funds that can be used for signing new contracts. In the FY 2018-19, then Indian Army's Vice-chief had candidly admitted before the Standing Committee on Defence (SCoD) that the allocation was insufficient even to cater for the committed liabilities.

The following year there was a gap of Rs 33,000 crore in committed expenditure category. It prompted the SCoD to caution MoD about the adverse consequences of defaulting on making contractual payments. The caution was repeated by SCoD last year (FY 2020-21). It remains unknown if any steps have been taken to check the steep rise in the committed liabilities.

This raises serious questions about how much of the Rs 70,221 crore, set aside for domestic procurements, would be available for awarding new contracts. Going by the recent trend of the committed liabilities crowding out the space for new acquisition contracts, it may not be much. The MoD must allay this apprehension, which was also expressed at the webinar.

Most importantly, between FY 2014-15 and FY 2017-18 the expenditure on procurement from the foreign vendors accounted for an average of approximately 38.5% of the total expenditure, with the remaining 61.5% being spent on procurement from the Indian sources. The expenditure on imports jumped to 48.67% in the FY 2018-19, but it seems to have been an aberration, as in the FY 2019-20 (up to the end of December 2019), the total expenditure on foreign procurements had again come down to 38.36%.

Viewed in this background, earmarking of 63% of the 'capital acquisition' budget for domestic procurements is, at best, in keeping with the past trend and by no means a game-changing measure. It is difficult to say how much of a multiplier effect it will have on the industry, including the Micro, Small and Medium Enterprises and start-ups or on generation of employment, which was projected at the webinar as the underlying objective of the exercise.

(The author is a former Financial Advisor (Acquisition), Ministry of Defence. Views are personal.)

<https://www.financialexpress.com/defence/separate-budget-for-domestic-defence-purchases-requires-more-clarity/2201055/>

Army in process of acquiring 556 Augmented Reality Head Mounted Display systems

ARHMD is conceived as capability enhancement to Land Based Air Defence Weapon Systems such as the IGLA shoulder-fired Infrared Homing Air Defence Missile System

New Delhi: The Army is in the process of acquiring 556 Augmented Reality Head Mounted Display (ARHMD) systems, the defence ministry said in a statement on Wednesday.

ARHMD is conceived as capability enhancement to Land Based Air Defence Weapon Systems such as the IGLA shoulder-fired Infrared Homing Air Defence Missile System and the ZU 23mm 2B AD Gun System, which will provide the operator with radar and thermal imaging (TI) sight outputs as overlays.

The proposed system intends to enhance the engagement capability during night and conditions of inclement weather and day-time engagements are also intended to be enhanced through increased reaction times, data computation for decision support and integration of the output of TI sight.

"Indian Army is in the process of acquiring niche technology by procuring quantity 556 Augmented Reality Head Mounted Display (ARHMD) systems under Make-II category," the statement said.

After a successful evaluation of vendor responses, a project sanction order (PSO) was issued to six vendors on February 22 to start developing the prototype.

The contract will be placed with one of the firms after a successful development of the prototype in accordance with the provisions of the "buy" (Indian-IDDMM) category of DAP 2020.

In another statement, the ministry said a contract for the construction of eight Missile-cum-Ammunition (MCA) barges has been concluded with M/s SECON, Visakhapatnam on February 19.

The delivery of the barges is scheduled to commence from July 2022.

The MCA barges will be inducted in the Indian Navy to undertake the mission needs for embarking or disembarking missile, gunnery and ASW ammunition, the statement added.

<https://www.newindianexpress.com/nation/2021/feb/25/army-in-process-of-acquiring-556-augmented-reality-head-mounted-display-systems-2268571.html>



For representational purpose. (Photo | PTI)

Sonam Wangchuk makes mobile solar-powered tent for Indian Army

“Indian and Chinese troops are being withdrawn from friction points. Disengagement is happening. It is good thing for both. Around 50,000 troops were deployed at high- altitude areas in harsh winter conditions. It was a difficult situation.”

New Delhi: Ladakh-based engineer Sonam Wangchuk, who inspired the character of ‘Phunsukh Wangdu’ in Bollywood blockbuster “Three Idiots”, has developed a mobile solar-powered tent, accommodating 10 soldiers, for use by the Indian Army in high-altitude locations.

On how he came up with the idea, Wangchuk said that he decided to come up with the innovation after he came to know that around 50,000 Indian troops were deployed at high altitude areas in harsh winter conditions.

“Indian and Chinese troops are being withdrawn from friction points. Disengagement is happening. It is good thing for both. Around 50,000 troops were deployed at high- altitude areas in harsh winter conditions. It was a difficult situation,” he said.

When soldiers are deployed in harsh freezing temperature, they stayed in tents made of cloth or in iron containers, and lakhs of litres of kerosene are used. It is a very costly affair as it also adds pollution to the environment and affect glaciers at high altitude areas, Wangchuk said.



(Picture: IANA)

“The soldiers too face problems using kerosene... many even suffer winter injuries,” the engineer said.

He said that at the Himalayan Institute of Alternative Ladakh, they innovate on ways for comfortable living at higher altitudes.

“As our soliders were living at high altitude areas, so we decided why should we not develop solar-heated shelters for them,” said Wangchuk, who has carried out research on solar-heated houses for last 25 years.

He said that 15 years ago, he had developed a mobile shelters for nomad shepherds in the Changtang region of Ladakh.

“We started working on a project of a passive solar-heated tent in the varsity. It took a month to develop the tent,” he said.

The tent he came up for the army is divided into two parts: ‘green house’ which is also known as solar lounge and a sleeping chamber where soliders sleep. The two parts are divided by a portable wall that is called the heat bank.

Highly insulated, the tent is covered by a water proof ‘windcheater’.

Soliders can sit and work in the green house part during the afternoon, while in the sleeping chamber, temperature is maintained at 15 degrees Celsius.

The cost of tent is Rs 5 lakh.

“While making this tent, we kept it in mind that these are portable. It is made also keeping in mind hilltops like Black Top, Rejang La and Siachen. When we open up this tent, it turns out into 30 to 40 parts and each part is less than 30kg,” Wangchuk said.

He said that he designed the tent in close coordination and cooperation with the Indian Army.

Defence Secretary Ajay Kumar thanked Wangchuk and said that the innovation was very timely, absolutely relevant and perfect as usual.

<https://www.thestatesman.com/supplements/evolve/sonam-wangchuk-makes-mobile-solar-powered-tent-indian-army-1502954022.html>



Thu, 25 Feb 2021

World's first solar heated tent for Indian Army by Sonam Wangchuk: Features, significance, benefits and uses

World's first solar heated tent for Indian Army has been invented by Sonam Wangchuk. Know about it's features, uses and significance here

By Tulika Tandon

Why in News?

Recently the Chinese infiltration in the Galwan Valley has caused the Indian armed forces to be active and posted 24x7 in the soul chilling region. The temperatures reaching below -20 degrees in the region creates a lot of difficulty for the forces to stay in the region. HIAL or Himalayan Institute of Alternative Learning has been working on a special tent that can be heated through solar energy. It is a passive solar heated tent. Take a look at the details below.

Who has invented the Solar Heated Tent?

Sonam Wangchuk has built a portable military tent that can be heated through solar panels and can seat 10 jawans at a time. Interestingly Sonam was the man behind the character of Phunsuk Wangdu in the bollywood movie '3 Idiots'.

He is an education reformist and a scientist.



First Solar Heated Tent for Indian Army

Significance of the Solar Heated Tent:

1. The tent would be portable and is heated by solar energy, which happens to be a renewable source of energy.
2. Its usage would avoid tonnes of kerosene being used and imported from the Middle east.
3. Also if there would be no burning of kerosene, there would be lesser pollution in the Himalayan regions.
4. The army officers and personnel would be able to keep warm in temperatures as low as -14 degree centigrades.

About the Passive Solar Heated Tent:

Structure:

1. The front end of the tent is called the Greenhouse section, which uses solar energy to be heated
2. The tent is not more than 30 kgs in weight.
3. The tent is specifically made portable keeping in mind the mountain tops and heights the soldiers have to walk.
4. The rear end has a sleeping chamber in which the soldiers can sleep during the nights
5. The tent has a covering of a wind cheater on it to guard it from cold wind during winters.

6. There is also a solar lounge on the front which is heated during the day and the soldiers can find sitting arrangements in it. However at night this area would not be warm.

Working:

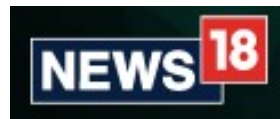
1. The solar tent requires sun rays to enter from the South to heat the walls built in the front chamber. This wall is made of polycarbonate which does not allow the solar rays to exit the chamber.
2. The sleeping chamber is surrounded by an insulator too so that the heat does not leave the tent.
3. The sleeping chamber is situated in the north of the tent. It is surrounded by insulator bags like those in sleeping bags.
4. The round structure of the tent reduces the surface area and prevents loss of heat from it.

Solar Heated Tent: Advantages for Indian Army

A new version of Aluminium would be also brought in the next few months. The tent costs around 5 lakh to the makers. It is still economical than the iron tents that are used by the army at present which costs almost 9 lakhs per piece to the army.

The biggest advantage of the tent as informed by Sonam Wangchuk would be to the environment of the place as the Indian army burns down 1 lakh kilograms of fuel to generate heat in Ladakh which generates more than 3 lakh metric tonnes of CO2 in the atmosphere. This solar tent would provide enough warmth to the army personnels and would take care of their needs in the areas on no roofs.

<https://www.jagranjosh.com/general-knowledge/worlds-first-solar-heated-tent-for-indian-armys-features-uses-and-significance-1614161901-1>



Thu, 25 Feb 2021

Army likely to start using SAI for internal communications from April 1

From April 1, the Indian Army is likely to start using SAI (Secure Application for Internet), a messaging platform, for internal communications, Army chief General MM Naravane said on Wednesday. He said the application, developed by Colonel Sai Shankar, is undergoing the process of getting cyber and security clearance and data testing

New Delhi: From April 1, the Indian Army is likely to start using SAI (Secure Application for Internet), a messaging platform, for internal communications, Army Chief General MM Naravane said on Wednesday. He said the application, developed by Colonel Sai Shankar, is undergoing the process of getting cyber and security clearance and data testing.

“One of our officers has developed a software application, which is the equivalent of WhatsApp. “We plan to introduce that throughout the Indian Army. It is undergoing cyber clearance, security clearance and data testing. And maybe from April 1, we will only use that for our internal communications,” Naravane said at a webinar organised by the Vivekananda International Foundation.



The application supports end-to-end secure voice, text and video-calling services for Android platforms over the internet. The model is similar to commercially available messaging applications such as WhatsApp, Telegram, SAMVAD and GIMS, and utilises the end-to-end encryption messaging protocol. SAI scores over these platforms in terms of security features with local in-house servers and coding, which can be tweaked as per requirements.

(Disclaimer: This post has been auto-published from an agency feed without any modifications to the text and has not been reviewed by an editor)

<https://www.news18.com/news/india/army-likely-to-start-using-sai-for-internal-communications-from-april-1-3470651.html>

Science & Technology News

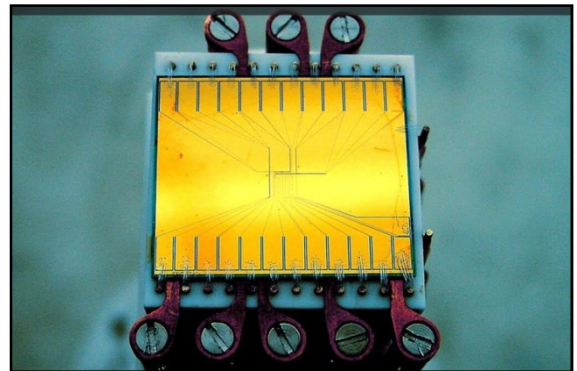


Thu, 25 Feb 2021

Researchers produce beams of entangled atoms

Heads or tails? If we toss two coins into the air, the result of one coin toss has nothing to do with the result of the other. Coins are independent objects. In the world of quantum physics, things are different: Quantum particles can be entangled, in which case they can no longer be regarded as independent individual objects, they can only be described as one joint system.

For years, it has been possible to produce entangled photons—pairs of light particles that move in completely different directions but still belong together. Spectacular results have been achieved, for example in the field of quantum teleportation or quantum cryptography. Now, a new method has been developed at TU Wien (Vienna) to produce entangled atom pairs—and not just atoms which are emitted in all directions, but well-defined beams. This was achieved with the help of ultracold atom clouds in electromagnetic traps.

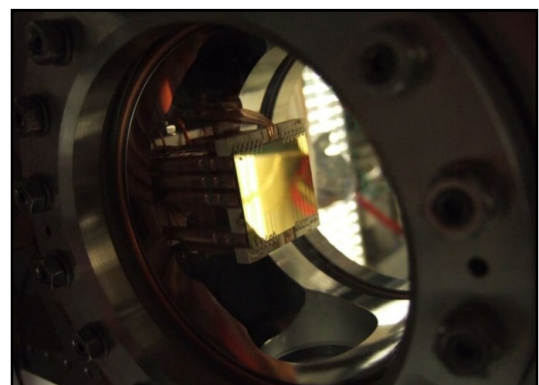


The atom chip at TU Wien. Credit: Vienna University of Technology

Entangled particles

"Quantum entanglement is one of the essential elements of quantum physics," says Prof. Jörg Schmiedmayer from the Institute of Atomic and Subatomic Physics at TU Wien. "If particles are entangled with each other, then even if you know everything there is to know about the total system, you still cannot say anything at all about one specific particle. Asking about the state of one particular particle makes no sense, only the overall state of the total system is defined."

There are different methods of creating quantum entanglement. For example, special crystals can be used to create pairs of entangled photons: a photon with high energy is converted by the crystal into two photons of lower energy—this is called "down conversion." This allows large numbers of entangled photon pairs to be produced quickly and easily.



The atom chip, precisely controlling the atoms. Credit: Vienna University of Technology

Entangling atoms, however, is much more difficult. Individual atoms can be entangled using complicated laser operations—but then you only get a single pair of atoms. Random processes can also be used to create quantum entanglement: if two particles interact with each other in a suitable way, they can turn out to be entangled afterwards. Molecules can be broken up, creating entangled

fragments. But these methods cannot be controlled. "In this case, the particles move in random directions. But when you do experiments, you want to be able to determine exactly where the atoms are moving," says Jörg Schmiedmayer.

The twin pair

Controlled twin pairs could now be produced at TU Wien with a novel trick: a cloud of ultracold atoms is created and held in place by electromagnetic forces on a tiny chip. "We manipulate these atoms so that they do not end up in the state with the lowest possible energy, but in a state of higher energy," says Schmiedmayer. From this excited state, the atoms then spontaneously return to the ground state with the lowest energy.



A look at the atom chip in the experimental setup. Credit: Vienna University of Technology

However, the electromagnetic trap is constructed in such a way that this return to the ground state is physically impossible for a single atom—this would violate the conservation of momentum. The atoms can therefore only get transferred to the ground state as pairs and fly away in opposite directions, so that their total momentum remains zero. This creates twin atoms that move exactly in the direction specified by the geometry of the electromagnetic trap on the chip.

The double-slit experiment

The trap consists of two elongated, parallel waveguides. The pair of twin atoms may have been created in the left or in the right waveguide—or, as quantum physics allows, in both simultaneously. "It's like the well-known double-slit experiment, where you shoot a particle at a wall with two slits," says Jörg Schmiedmayer. "The particle can pass through both the left and the right slit at the same time, behind which it interferes with itself, and this creates wave patterns that can be measured."

The same principle can be used to prove that the twin atoms are indeed entangled particles: only if you measure the entire system—i.e., both atoms at the same time—can you detect the wave-like superpositions typical of quantum phenomena. If, on the other hand, you restrict yourself to a single particle, the wave superposition disappears completely.

"This shows us that in this case it makes no sense to look at the particles individually," explains Jörg Schmiedmayer. "In the double-slit experiment, the superpositions disappear as soon as you measure whether the particle goes through the left or the right slit. As soon as this information is available, the quantum superposition is destroyed. It is very similar here: if the atoms are entangled and you only measure one of them, you could theoretically still use the other atom to measure whether they both originated in the left or the right part of the trap. Therefore, the quantum superpositions are destroyed."

Now that it has been proven that ultracold atom clouds can indeed be used to reliably produce entangled twin atoms in this way, further quantum experiments are to be carried out with these atom pairs—similar to those that have already been possible with photon pairs.

More information: F. Borselli et al. Two-Particle Interference with Double Twin-Atom Beams, *Physical Review Letters* (2021). DOI: [10.1103/PhysRevLett.126.083603](https://doi.org/10.1103/PhysRevLett.126.083603)

Journal information: [Physical Review Letters](https://phys.org/news/2021-02-entangled-atoms.html)
<https://phys.org/news/2021-02-entangled-atoms.html>

Quantum shuttle to quantum processor made in Germany launched

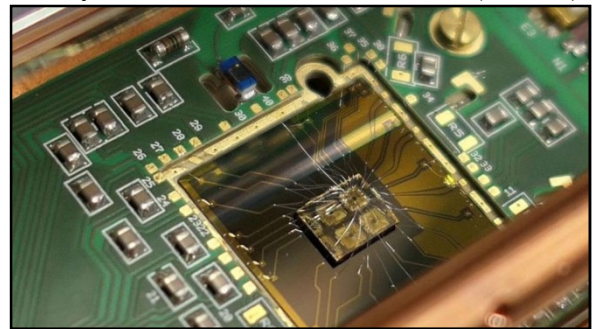
By Forschungszentrum Juelich

The quantum computer race is in full swing. Germany has long been one of the world leaders in basic research. An alliance between Forschungszentrum Jülich and the semiconductor manufacturer Infineon, together with institutes of the Fraunhofer-Gesellschaft (IAF, IPMS) as well as the Leibniz Association (IHP, IKZ), the universities of Regensburg and Konstanz and the quantum start-up HQS, now aims to apply the results to industrial production. The goal is a semiconductor quantum processor made in Germany that is based on the "shuttling" of electrons and is to be achieved with technology available in Germany. The QUASAR project, which is funded with over 7.5 million euros by the Federal Ministry of Education and Research (BMBF), aims to lay the foundations for the industrial production of quantum processors over the next four years.

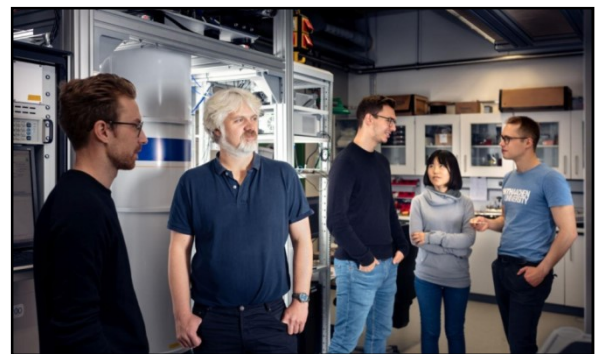
Quantum computers have the potential to outperform conventional supercomputers by far in certain problems, for example when it comes to controlling traffic flows in metropolitan areas or simulating materials at the atomic level. But it is still unclear which approach will win the race among quantum computers. Experiments with superconducting qubits, the smallest units of a quantum computer, are currently the most advanced. For example, Google's quantum chips and the experimental quantum computer in the European Quantum Flagship project, which is to go into operation this year at Forschungszentrum Jülich, are based on them. But when it comes to large numbers of qubits, semiconductor qubits may have the advantage.

"At Jülich, we are investigating both types of qubits, semiconductor-based and superconductor-based. There are strong synergy effects, for example, in the development of quantum software, component development and their integration into experimental computer architectures," says Prof. Wolfgang Marquardt, Chairman of the Board of Directors of Forschungszentrum Jülich. "In the long term, we want to realize a freely accessible quantum computer for science at Jülich. The QUASAR project is an important step for this project—in combination with our other activities, such as the European Quantum Flagship or the research of quantum materials."

Silicon electron spin qubits are one promising system for semiconductor qubits because they have comparatively robust quantum properties and are much smaller in size than superconducting quantum bits. "A big advantage is that their production is largely compatible with the production of silicon processors. This means that, in principle, there is already a lot of experience with the fabrication processes," says project coordinator Professor Hendrik Bluhm, Director at the JARA Institute for Quantum Information at Forschungszentrum Jülich. One example is Infineon in



Semiconductor quantum chip from the JARA cooperation between Forschungszentrum Jülich and RWTH Aachen University. Credit: Jülich Aachen Research Alliance (JARA)



Project coordinator Prof. Dr Hendrik Bluhm (2nd from left) at the JARA Institute for Quantum Information. Credit: Simon Wegener

Dresden: in the project, the German semiconductor manufacturer helps with its production expertise adapting the component design for industrial manufacturing.

"Fundamental questions still need to be clarified. So far, it has not been possible to scale up quantum chips as easily as conventional computer chips. One problem has been geometric constraints. The qubits usually have to be very close together in order for them to be coupled to each other. Therefore, semiconductor qubits have been demonstrated up to now primarily in components that have no more than two coupled qubits close to each other. For a scalable architecture, however, we need more space on the quantum chip, for example for feed lines and control electronics," says Hendrik Bluhm.

In order to increase the distances, the researchers from the JARA cooperation of Forschungszentrum Jülich and RWTH Aachen University, together with other research partners, have developed a something called a quantum bus. This special interconnection element allows distances of up to 10 micrometers between the individual qubits to be bridged efficiently. In silicon qubits, the quantum information is encoded by the spin of electrons located in quantum dots—special nanoscopic semiconductor structures. The quantum bus can capture the electrons on these quantum dots and transport them in a controlled way without losing the quantum information.

From the laboratory to production

The exchange of electrons is also known as "shuttling". In the laboratory, experimental samples are already showing promising results. Now the Jülich researchers want to adapt the device's design to industrial manufacturing processes. To this end, they have joined forces in the QUASAR project with Infineon Dresden, the start-up HQS specializing in quantum mechanical material simulations, institutes of the Fraunhofer-Gesellschaft (IAF, IPMS) as well as the Leibniz Association (IHP, IKZ) and the universities in Regensburg and Konstanz.

"One of the challenges here is the required degree of material quality, which is much higher for this application than for the production of conventional computer chips," says Hendrik Bluhm. "Another open point is the miniaturization of the control systems on the chip. In principle, however, we see great potential in this approach for complex circuits. Millions of qubits are realistic."

The QUASAR project will run until January 2025. The next step is to build a demonstrator with around 25 coupled qubits, which will be implemented in a follow-up project and integrated into the modular HPC environment of the Jülich Supercomputing Centre via the "Jülich User Infrastructure for Quantum Computing" (JUNIQ) with cloud access.

<https://phys.org/news/2021-02-quantum-shuttle-processor-germany.html>

Nature's funhouse mirror: Understanding asymmetry in the proton

Asymmetry in the proton confounds physicists, but a new discovery may bring back old theories to explain it.

Symmetry—displayed in areas ranging from mathematics and art, to living organisms and galaxies—is an important underlying structure in nature. It characterizes our universe and enables it to be studied and understood.

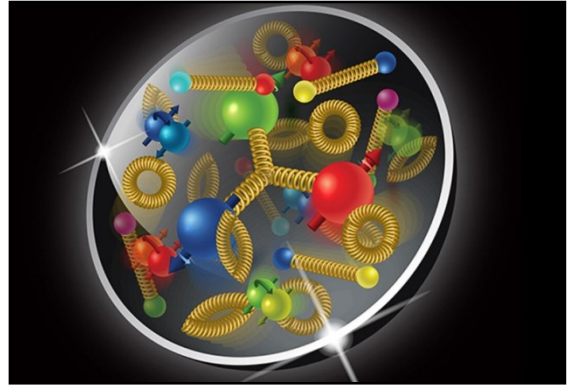
Because symmetry is such a pervasive theme in nature, physicists are especially intrigued when an object seems like it should be symmetric, but it isn't. When scientists are confronted with these broken symmetries, it's as if they've found an object with a strange reflection in the mirror.

The proton, a positively charged particle that exists at the center of every atom, displays asymmetry in its makeup. Physicists at the U.S. Department of Energy's (DOE) Argonne National Laboratory and their collaborators recently investigated the intricacies of this known broken symmetry through an experiment conducted at DOE's Fermi National Accelerator Laboratory. The results of the experiment could shift research of the proton by reviving previously discarded theories of its inner workings.

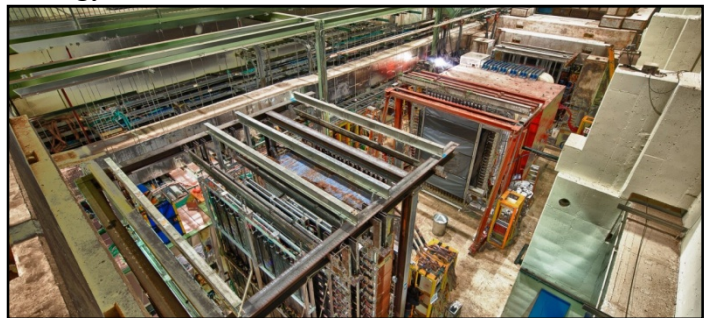
The outcome of this experiment contradicts the conclusion of a study from the late 90s, also performed at Fermilab. Scientists can now revisit theories to describe asymmetry in the proton that were ruled out by the old experiment.

Understanding the properties of the proton helps physicists answer some of the most fundamental questions in all of science, and by investigating the world at the smallest level, scientists are advancing technology we use every day. Studies of the proton have led to the development of proton therapy for cancer treatment, measurement of proton radiation during space travel and even understanding of star formation and the early universe.

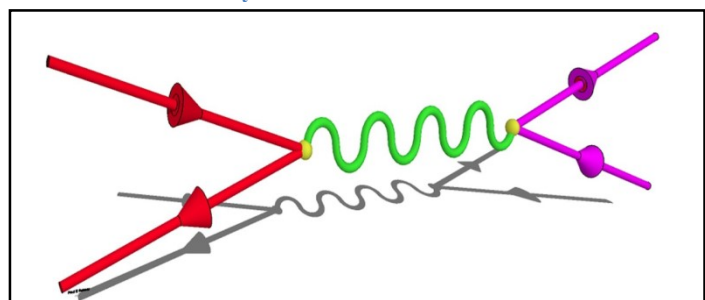
"We were able to look at the puzzling dynamics within the proton," said Argonne physicist Don Geesaman, "and through this experiment, nature is leading the way for concepts in older models of the proton to get a second look."



Graphical representation of the proton. The large spheres represent the three valence quarks, the small spheres represent the other quarks that make up the proton, and the springs represent the nuclear force holding them together. Credit: Brookhaven National Laboratory



The apparatus used in the experiment. The proton beams pass through each of the shown layers. Credit: Fermi National Accelerator Laboratory



Graphic of quarks annihilating (left red lines), producing a photon (middle line), and producing two muons (right magenta lines). Scientists detected these muons to gain insight into the quark asymmetry of the proton. Credit: Paul Reimer/Argonne National Laboratory

Mismatched matter

Just as shapes can have symmetry, particles can, too. A perfect circle consists of two semicircles of the same size facing opposite directions, and each type of particle in the universe has an antiparticle of the same mass with opposite electric charge.

The building blocks of the proton include particles called quarks, and their antiparticles, called antiquarks. They come in "flavors", such as up, down, anti-up and anti-down. Quarks and antiquarks are bound together inside the proton by a strong nuclear force. The strength of this force can pull pairs of quarks and antiquarks out of nothing, and these pairs exist for a short time before annihilating each other. This "sea" of quarks and antiquarks popping in and out of existence is ever-present inside the proton.

Curiously, at any given time, there are three more quarks than antiquarks: two more up quarks than anti-up quarks, and one more down quark than anti-down quarks. In other words, these mismatched quarks have no antimatter counterparts. This asymmetry is the reason protons are positively charged, allowing atoms—and therefore all matter—to exist.

"We still have an incomplete understanding of quarks in a proton and how they give rise to the proton's properties," said Paul Reimer, an Argonne physicist on the study. "The fleeting nature of the quark-antiquark pairs makes their presence in the protons difficult to study, but in this experiment, we detected the annihilations of the antiquarks, which gave us insight into the asymmetry."

The experiment determined that there are always more anti-down quarks in the proton than anti-up quarks, no matter the quarks' momentums. The significance of this result is its contradiction with the conclusion of the Fermilab experiment in the late 90s, which suggested that at high momentums, the proton's asymmetry reverses, meaning the anti-up quarks begin to dominate anti-down quarks.

"We designed the new experiment to look at these high momentums to determine if this change really occurs," said Reimer. "We showed that there is a smooth asymmetry with no flip of the ratio between anti-up and anti-down quarks."

Reconstructing annihilation

To probe the quarks and antiquarks in the proton, the scientists shot beams of protons at targets and studied the aftermath of the particle collisions. Specifically, they studied what happens after a proton from the beam hits a proton in the target.

When protons collide, quarks and antiquarks from the protons annihilate each other. Then, two new fundamental particles called muons come out of the annihilation, acting as the interaction's signature. From these interactions, the scientists determined the ratio of anti-up quarks to anti-down quarks at a range of high momentums.

"We chose to measure muons because they can pass through material better than most of the other collision fragments," said Reimer. In between the targets and their measurement devices, the team placed a five-meter-thick iron wall to stop other particles from passing through and clouding their signals.

When the muons hit the measurement devices at the end of their journey, the scientists reconstructed the quark-antiquark annihilations from the measurements, enabling them to confirm the smooth, consistent ratio of anti-up quarks to anti-down quarks.

A second look

"What we thought we saw in the previous experiment isn't what happens," said Geesaman, who was part of both the present and previous studies. "Why, though? That's the next step."

Theories that were rejected after they contradicted the previous experiment's results now give a great description of the new data, and scientists can revisit them with greater confidence because of this experiment. These theories will inform further experiments on asymmetry in the proton and other particles, adding to our understanding of the theory surrounding quarks.

Clues about the nature of quarks in the proton ultimately lead to better understanding of the atomic nucleus. Understanding the nucleus can demystify properties of the atom and how different chemical elements react with each other. Proton research touches upon fields including chemistry, astronomy, cosmology and biology, leading to advances in medicine, materials science and more.

"You need experiment to lead the thinking and constrain theory, and here, we were looking for nature to give us insight into the proton's dynamics," said Geesaman. "It's an interlacing cycle of experiment and theory that leads to impactful research."

A paper on the study, "The asymmetry of antimatter in the proton", was published in *Nature* on Feb. 24.

More information: The asymmetry of antimatter in the proton, *Nature* (2021). DOI: [10.1038/s41586-021-03282-z](https://doi.org/10.1038/s41586-021-03282-z) , dx.doi.org/10.1038/s41586-021-03282-z

Journal information: [Nature](#)

<https://phys.org/news/2021-02-nature-funhouse-mirror-asymmetry-proton.html>

COVID-19 Research News



Thu, 25 Feb 2021

Research finds wearing glasses may reduce chances of catching COVID-19

Scientists in Northern India have suggested that spectacle wearers have a two to three times lower risk of contracting COVID-19 than those who do not wear glasses

By Selina Powell

A new pre-print study published on [medRxiv](#) has highlighted that wearing glasses may help to protect an individual from contracting COVID-19.

Researchers determined that a glasses-wearing population in Northern India had a two to three times lower risk of testing positive for COVID-19 than those who do not wear spectacles.

The authors highlighted that the virus is mainly spread through respiratory droplets and contact routes.

"Long term use of spectacles may prevent repeated touching and rubbing of the eyes," the scientists noted.

Touching and rubbing of the eyes may be a significant route of viral infection, the authors observed.

"It is advised that the health care workers should use face shields and goggles to protect their eyes. Wearing spectacles does not protect the eyes as much as the goggles, yet it may provide some degree of protection," the authors emphasised.

<https://www.aop.org.uk/ot/science-and-vision/research/2021/02/24/research-finds-wearing-glasses-may-reduce-chances-of-catching-covid19>



PIXABAY/DARIUSZ SANKOWSKI

