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The Times of India 12 February 2016

Cementing ties - India, UAE ink 7 pacts but fail to seal deal on civil N-energy

Seek To Boost Bilateral Trade By 60% In 5 Yrs

India and UAE on Thursday signed seven agreements spanning cyber security , infrastructure investment, renewable energy and space cooperation as Prime Minister Narendra Modi twice met the visiting Abu Dhabi Crown Prince Sheikh Mohamed bin Zayed Al Nahyan. The two had a tete-a-tete in the morning which was followed up later with delegation-level talks. Two more agreements, including one on currency swap, are expected to be signed on Friday in Mumbai, said MEA spokesperson Vikas Swarup. Official sources said Modi and Al Nahyan discussed ways to increase the annual trade volume by over 60% in the next 5 years. The two countries couldn't conclude an agreement for civil nuclear energy cooperation though. UAE had earlier said that it was looking forward to signing that agreement during the visit. "Cooperation in the oil sector, food security , UAE's contribution to our strategic oil reserves, maritime security and terrorism as a common threat were some of the other issues discussed by the two leaders," said an official. The crown prince also praised the role of the Indian community in the development of UAE. "Productive interaction with HH Mohamed bin Zayed Al Nahyan. Avenues of IndiaUAE cooperation are immense," Modi later tweeted. President Pranab Mukherjee hosted a private lunch for A Nahyan. Mukherjee said there was a desire to intensify cooperation between the two countries in a wide range sectors -political, economic, security as well as on regional and multilateral issues. Foreign minister Sushma Swaraj had on Wednesday called on Al Nahyan. The two discussed the challenge posed by the IS and emphasised the need to work closely to defeat terrorism. The issue of a Saudi Arabia-led alliance against IS also came up for discussion, sources said. In this regard, Swaraj also complimented UAE for supporting the Comprehensive Convention on International Terrorism (CCIT) to effectively deal with the menace globally . India has been pressing for adoption of the CCIT by the UN. The two also deliberated on the need to contain radicalism, the sources said.

The Asian Age 12 February 2016

Safe seas, safer India

By Arun Kumar Singh

We need to ensure that we have a Navy which will provide both 'safer seas and strategic sea-based deterrence', and the first step would be to increase its budget and fill in the gap in its underwater combat capability. In 1415, King Henry V is reported to have inspected the English fleet before it sailed for war with France, thus beginning the tradition of fleet review by the head of state. In modern times nations have held fleet reviews, both at the national (called PFR, or Presidential Fleet Review) and international (called IFR, or International Fleet Review) levels, to showcase their maritime growth while at the same time improving goodwill and friendship with other nations. Traditionally, as the Supreme Commander of the Armed Forces, the President of India reviews the fleet once during his tenure in office. The PFR or IFR is a grand ceremony where the President sails in a ship designated as the presidential yacht and inspects the warships at anchorage. Seminars, a city parade and a "naval firepower demonstration" which showcases naval combat capabilities to the political leadership and public who watch it from the seafront also take place. On October 10, 1953, India held its first PFR with President Rajendra Prasad reviewing the Indian fleet at Bombay. Till now, India has had seven PFRs and two IFRs. Having participated as Eastern Fleet commander in India's first-ever IFR held at Mumbai on February 17, 2001, I was looking forward to attending the second IFR, which was held on February 6 at Visakhapatnam though I was unable to attend the same due to other commitments. It was a grand affair with 54 nations participating and 24 nations sending their warships. China - which had missed IFR 2001 because Pakistan was not invited - sent two warships and a delegation, while Pakistan, though

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Safe seas, safer India

invited, did not attend. Visakhapatnam, which was ravaged in 2015 by a super cyclone, received a much-needed facelift to welcome foreign visitors who included 21 Navy Chiefs, ambassadors, and military officers, in addition to the top Indian leadership, including the President, Prime Minister, defence minister, governors, chief ministers, etc. The Indian Navy was represented by over 70 warships, 34 aircraft and submarines. The Indian Coast Guard ships and aircraft also participated along with merchant ships. Over 99 warships (including 28 foreign warships from 24 nations) present at anchorage off Visakhapatnam, along with numerous VIPs and massive crowds, posed a huge security challenge given the number of terrorist attacks emanating from neighbouring countries. The Indian Navy, along with other security agencies, ensured that a layered seaward security system based on constant patrolling by ships, aircraft and submarines ensured safety against any sea-borne terror strike during IFR 2016. As the IFR concluded on February 8, India announced that it would host a 30-nation "Global Maritime Summit" in Mumbai from April 14-16. This will be inaugurated by Prime Minister Narendra Modi with the aim of attracting $6 billion as foreign direct investment to boost India's maritime infrastructure, which contributes directly to Indian economic growth as 90 per cent of trade and over 80 per cent of our oil imports are done via the seas. This is indeed a laudable move and shows how the Indian leadership is aware of the linkage of Indian economic growth to the oceans of the world. Another timely and relevant event is Defexpo 2016, which is being held for the first time in Goa from March 26 to 31. The shift in venue from New Delhi (Pragati Maidan) to Goa could be partly due to defence minister Manohar Parrikar being a Goan. However, it also indicates that New Delhi is finally overcoming its traditional "sea blindness" and India is taking its first step to becoming a sea power. However, despite the spectacular IFR 2016 and the statement by Chief of Naval Staff Admiral R.K. Dhowan that India is at present indigenously building 46 ships and submarines, I did notice that only three obsolete Kilo-class conventional submarines participated in the IFR. This indicates the rather sorry state of our submarine fleet which has rapidly reduced to 13 conventional units of which 12 have reached or will shortly reach the end of their designed operational 25-year life. Worse, all this comes at a time when the Chinese media had reported that a Chinese submarine was also on deployment in the Indian Ocean (during IFR). Attempts to extend the lives of these obsolete submarines by another 10 years with expensive refits costing Rs 5,000 crore is not going to meet the challenges posed by new capabilities being introduced by the Chinese and Pakistani Navies. The six conventional Scorpene-class submarines currently under construction at Mazagaon Docks Ltd (Mumbai) are over six years behind schedule and will enter service between 2016 and 2022. This leaves a huge vacuum in our underwater combat capability, which needs to be urgently addressed by direct purchase of SSNs (submerged ship, nuclear) or tactical nuclear submarines before we are confronted by a "surprise at sea" like the disastrous 1962 Sino-India war. For the record, China has over 50 conventional submarines, six SSNs and three SSBNs (ship submersible ballistic, nuclear), and one Chinese sub is always on deployment in the Indian Ocean, while Pakistan (which has five French Agosta-class conventional subs) has ordered eight modern Chinese Qing-class missile-firing conventional subs (four to be built in Karachi and four to be imported). The IFR 2016 was a good opportunity to showcase the emerging nuclear submarine force of the Indian Navy. It would have been a feather in our cap if Mr Modi could have commissioned our first indigeneous SSBN, Arihant, just before or during the IFR, thus enabling participation in the IFR by this vital asset which will form the third leg of our triad-based nuclear deterrence. Hopefully, Mr Modi will commission INS Arihant soon. So, while the Indian Navy has done the nation proud by conducting IFR 2016 and the government has taken the next logical step of announcing its plan of hosting a global maritime summit, a lot needs to be done. We need to ensure that we have a blue-water Navy which will provide both "safer seas and strategic sea-based deterrence", and the first step in this direction would be to increase its budget and fill in the gap in its underwater combat capability.

Deccan Herald **12 February 2016**

India-Gulf Cooperation

Whither 'strategic' ties?

By N Janardhan

India and other principal Asian players would have to stop riding 'piggyback' on US naval presence in the region's waters

It is time to look beyond the historic past or the vibrant present narrative of India-Gulf ties. A more meaningful assessment would be to view their relations from a futuristic perspective where the 'strategic' component would be overarching. The starting point in this endeavour is recognising that while we have had a 'new' India and Gulf during the last two decades, both will again be different over the next decade. Assuming that the Indian economy grows at the predicted rate and the Gulf economies readjust their economic fundamentals due to low oil prices, India-Gulf ties are headed for interesting times in the economic realm. Without going into international relations theories about what 'strategic' means, here are some thoughts from the India-Gulf developments since 2000 that could be construed as strategic, followed by how they may play out in future, in the context of Gulf security. First, the genesis of strategic engagement in the economic realm could be traced to the aftermath of 9/11, 2001, when the Gulf Cooperation Council (GCC) countries adopted a 'Look East' policy, which included India. This facilitated India-Gulf trade grow to about $200 billion annually. Second, Saudi Arabia's King Abdullah visiting India in 2006 was politically strategic because it occurred after a hiatus of 50 years. Further, in putting aside religious ideology and dealing with India on the same level as it did with Pakistan, the GCC conveyed that economic sense is common sense. Also setting the record straight after 2000 that Kashmir was a bilateral issue and giving India the same terms as Pakistan in the Framework Agreement on Economic Cooperation in 2004 were strategic moves. Third, in the security realm, the 2010 Riyadh Declaration and the 2015 Abu Dhabi Declaration elevated the partnership to the next (comprehensive) strategic level. Their real impact, in terms of hard security, may take a while to evolve. But in terms of soft security, the extradition of 26/11 Mumbai terror attack conspirator Abu Jindal from Saudi Arabia and Islamic State sympathisers from the UAE in the recent past are strategic. Even in 'hard' security, the 2008 India-Qatar defence cooperation pact, described as an agreement "just short of stationing (Indian) troops" in Qatar is significant. India and Oman also agreed to enhance their defence the same year. So far, so good. What next? First, if Narendra Modi's visit to the UAE in 2015, the first by an Indian prime minister in 33 years, was a strategic recognition of this country and region, the unprecedented quick reciprocal visit of Abu Dhabi Crown Prince (and acting UAE President) Sheikh Mohammed bin Zayed Al Nahyan to India this week is of greater political-strategic value. Second, strategic economic engagement may manifest, for example, in how the proposed $75 billion India-UAE Investment Fund is operationalised. Again, for example, investment in the food storage sector could be linked to infrastructure projects, as opposed to the GCC countries' idea of buying cultivable agriculture land to ensure food security. This would prove to be a win-win strategic engagement. Likewise, with low oil prices, there could also be efforts to build a strategic reserve or Indian oil and gas companies may make forays in the Gulf. Third, in the security arena, one needs to link India-GCC strategic ties to the 'strategic' shift away from the GCC's reliance on the decades old US-centric security net. Over the last decade, there have been calls for exploring the idea of incorporating several international actors who could act as security guarantors in any future collective security arrangement. This includes Asia. The point is that India and other principal Asian players would have to stop riding 'piggyback' on US naval presence in the region's waters at some point and find their own means of securing their sea lanes. Since this aligns with the security requirements of the region and assuming that the US engagement in the region will diminish in the decades ahead, it opens interesting and diversifying possibilities in the region's security arena. Diplomatic step While this is long term, attempting to ease Saudi-GCC-Iran tension could be a first strategic engagement in the short and medium terms. This is a diplomatic step, which addresses New Delhi's interests through Gulf stability. After all, India is among a few countries in the world that has commensurate ties with both parties. Two, it could begin back channel talks with countries like Oman and Qatar (even Kuwait), which are more amen-able to a thaw in GCC-Iran tension among the six-member GCC bloc. After all, Gulf security should have GCC input, lest the GCC would put forth the same accusation that they did when they were left out of the Iran-West nuclear talks. Three, Iran could be simultaneously engaged too. Last, India could begin diplomatic talks with principal Asian players about reaching a working consensus on Gulf security. Amid these 'soft' initiatives, there is scope for a few 'smart' initiatives. One, both sides could look beyond anti-piracy, disaster management, anti-extremism and anti-terror cooperation. Two, contemplate more defence pacts of the India-Qatar kind. Three, ditto with India-Oman joint naval exercises. Yes, some of these steps are beyond the comfort zone of both parties. But the US' role as a security guarantor and India being a 'free rider' are not eternal. Moreover, it is possible that the GCC countries could stress the economic-security linkage and demand a quid pro quo arrangement from India. In responding to these demands, which may mean not just addressing threats from state actors but also non-state actors like Islamic State, India would not just be addressing Gulf security dynamics but its own strategic necessities too, which is crucial in a 'post-US' multipolar world.

The Economic Times **12 February 2016**

Made In India Hawk To Be Exported Soon

By Manu Pubby

PACE OF PRODUCTION MATTERS TOO Combat version to be ready by next year IAF and navy looking at additional order with HAL wrapping up production a yr early. India is set to soon offer a locally made combat version of the Hawk aircraft for export to the world with license producer Hindustan Aeronautics Limited (HAL) set to roll out the first of the highly weaponised light attack planes by February 2017. The Combat Hawk, which has already generated interest for its potential in unconventional operations, is cur rently under development jointly with its original manufacturer BAE with HAL looking to integrate a new engine, weapon systems and possibly a radar. "The aim is to demonstrate the aircraft by the next Aero India show that is to take place in 2017. The project is on track. There is a strong demand for such an aircraft," a senior official associated with the Hawk aircraft project told ET. A weaponized version of the Hawk is already in service, with the Navy demonstrating its fire power at the recently concluded International Fleet Review (IFR).BAE has in the past shown its support for the combat Hawk project for possible export orders. The Hawk aircraft 123 of which are on order for the air force and navy are the primary advanced trainers for combat pilots in India. Pilots undergo their final stage of flying training on the aircraft before moving on to other streams. HAL, which builds the plane under license at Bengaluru, is set to deliver all 123 aircraft to the two services a year ahead of schedule, opening up capacity at its line. Besides the under negotiation order for 20 plus aircraft for the Surya Kiran aerobatic display team of the air force, the Navy too has expressed interest in ordering 17 more aircraft.

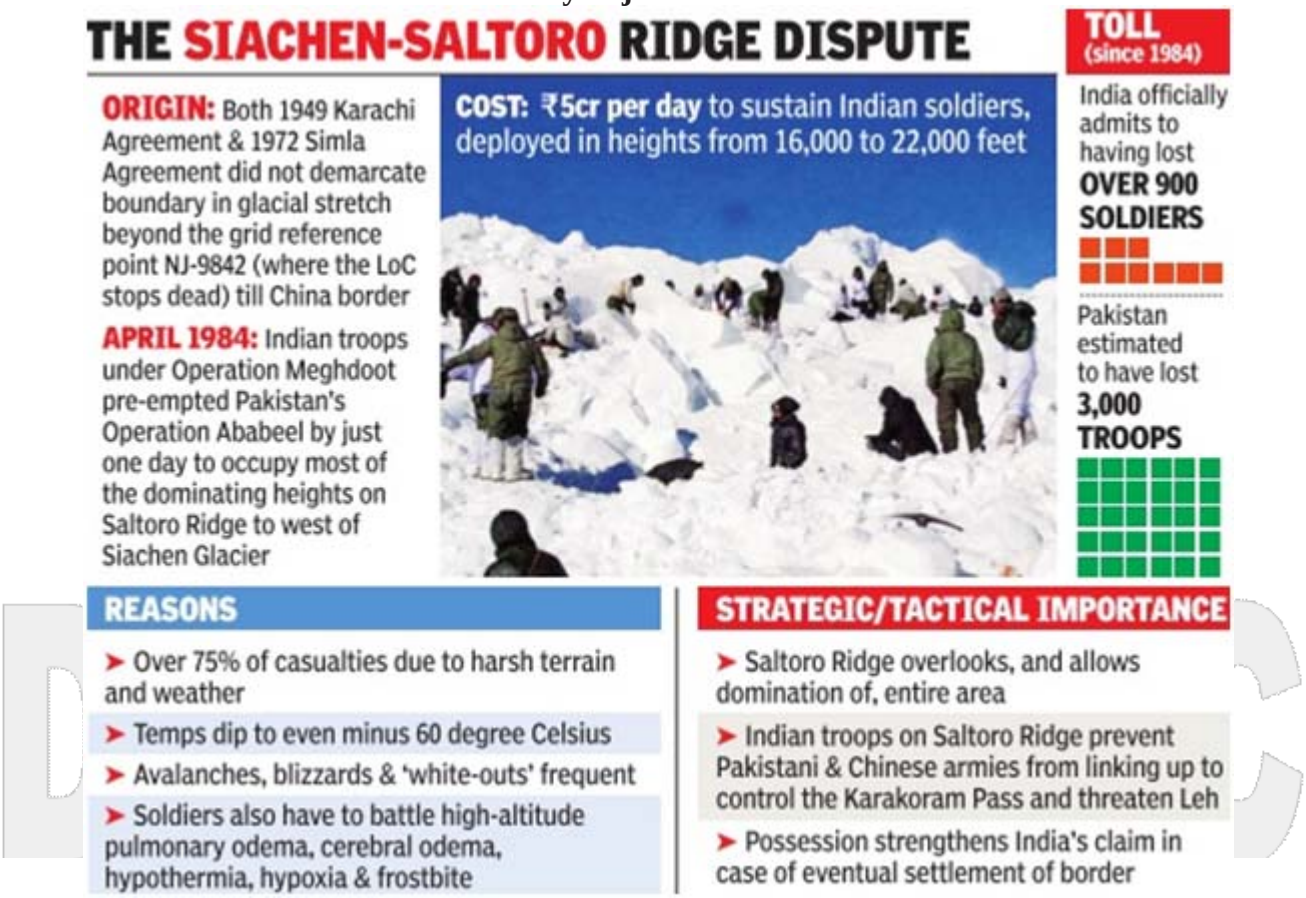
The Economic Times **12 February 2016**

Defence Forces Allowed to Buy Jammers

NEW DELHI: In a sudden reversal of stand, De fence forces have been allowed by the government to procure jammers for operational use under a new policy aimed at checking random proliferation of jammers.Defence forces, who were last month excluded from the list of agencies eligible to procure jammers, have now been included, in addition to Central Armed Police Forces (CAPFs) like CRPF, CISF and ITBP. "Jammers can be procured only by Defence Forces, CAPFs, state police and jail authorities," the revised policy states.-PTI

Siachen height provides military depth India can't afford to lose

By Rajat Pandit



Ever since Indian soldiers beat Pakistani troops by a whisker to daringly take most of the dominating heights on Saltoro Ridge to the west of Siachen Glacier in April 1984, the stand-off at the world's highest, coldest and costliest battlefield has intermittently grabbed the headlines. The high-altitude trench warfare and fiery firing duels between the two armies may have petered out over the years, especially after the November 2003 ceasefire agreement, but the forbidding glacial heights continue to exact a heavy toll of human lives. This was once again brought home by the heroic saga of Lance-Naik Hanumanthappa Koppad, who fought till the very end, after his nine other fallen comrades from the 19 Madras Regiment had perished in their icy graves following a massive avalanche on February 3. Some call it a futile fight over an icy , barren land, which has no real strategic significance. But the Indian defence establishment remains convinced about its "strategic and tactical value". Officials say the Army will not vacate the Saltoro Ridge till Pakistan first agrees to the sequential pre-requisites of "authentication, delineation and demarcation" of the 110km Actual Ground Position Line (AGPL), which marks the respective troop positions on the glacial heights. "It has to be done both on the ground and maps. Only then can the subsequent disengagement and demilita risation of Siachen be undertaken in a phased manner," said a senior official. Pakistan, however, has steadfastly refused to do this.Consequently , right from a draft agreement in 1989 when Rajiv Gandhi and Benazir Bhutto were at the helm to Manmohan Singh's wish to convert Siachen into "a mountain of peace" after he visited the glacier in 2005, attempts to resolve the festering dispute have made little headway . India, of course, has also gradually hardened its stand over the 13 rounds of defence secretary-level talks held since 1986. For one, unlike the earlier years, the Indian Army no longer haemorrhages heavily in the glacial he ights, with better infrastruc ture, logistics and practices in place. For another, China's expanding footprint in Gil git-Baltistan of Pakistan-oc cupied Kashmir

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The Times of India 12 February 2016

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Siachen height provides military depth India can't afford to lose

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as well as in Karakoram has heightened concerns here. Officials say the presence of Indian troops on the crag gy Saltoro Ridge, at heights varying from 16,000 to 22,000 feet, actually serves as a wed ge between China and Pakis tan to prevent them from "militarily linking up". Apart from "dominating" the entire area, including the Shaksgam Valley illegally ceded to China by Pakistan the strong Indian presence on Saltoro Ridge also provi des "some military depth" to Leh and Kargil, which could be threatened by the adversaries if they are given free reign in the area. "If we withdraw from the heights, and Pakistani troops occupy them, it would be next-to-impossible to dislodge them. Pakistani soldiers, deployed lower on the western slopes of Saltoro Ridge, have learnt this at great cost when they repeatedly tried to dislodge us in the earlier years," said a senior officer. "Trust deficit" remains the key issue. "If the Pakistan Army could surreptitiously violate the well-recognised Line of Control during the 1999 Kargil conflict, can we trust them on the AGPL?" asks a Major-General.

The Hindustan Times 12 February 2016

PROTECTING SIACHEN SOLDIERS

Indian Army has around 3,000 soldiers deployed on the Siachen glacier. The men carry special gear and equipment to survive the extreme conditions on the world's most unforgiving battleground

Special Goggles

These have 100% ultraviolet protection, keep off bright light reflected from the snow and guard against peripheral solar infiltration

Light -Weight Rucksack

Used for carrying personal items, including clothing and medicine, these have made of high-strength aluminium alloy. The backpacks have polyethylene pads for ease of carrying load. Each soldier carries minimum of 25 kg load.

Jackets

Austrian down jackets (jackets filled with the soft feathers of a duck or goose) with four layers of thermal clothing protect against high-speed wind and blizzard. Pants are also made from down.

Gloves

Imported light-weight gloves with thermal layers inside to withstand extreme temperatures. Special gloves used for working.

Ice Axes

These lightweight climbing tools have aluminium shafts. The soldiers also carry ropes, carabiners, slings and other equipment for climbing icewalls up to 150 feet high

Shoes with Crampons

These weigh up to 4 kg. French boot crampons -metal planes with spikes fixed under the snow boots -- improve mobility on snow and ice. Each crampon weighs 500 gram. Three layers of specials socks help soldiers withstand minus 50 degrees Celsius.

Weapons and Equipment

Soldiers carry the standard INSAS rifles, avalanche victim detector, radio set and extra batteries

The Pioneer **12 February 2016**

Top US Senator to block sale of f-16s to Pakistan

Dubbing Pakistan a "duplicitous partner" with ties to an anti-American militant group, top US Senator Bob Corker has made it clear that he would block the Obama administration's proposed sale of eight new F-16 jets to Islamabad. Corker, who chairs the Senate Foreign Relations Committee, has written to Secretary of State John Kerry listing his concerns over Pakistan continuing to provide a safe haven to leaders of the Haqqani network that has been attacking US-trained security forces in Afghanistan, The Wall Street Journal reported on Thursday. In his letter, Corker is said to have spoken about Pakistan's "immensely problematic" activities, contributing to the impression that it is a "duplicitous partner, moving sideways rather than forward in resolving regional challenges". Republican Corker, who sent the letter on Tuesday after his recent visit to Afghanistan, has been quoted by WSJ as saying in an interview that he does not want US taxpayer dollars going to support Pakistan's F-16 acquisitions. "While we're spending tremendous amounts of US dollars and certainly tremendous sacrifice in our men and women in uniform and by other agencies, they (Pakistan) are working simultaneously to destabilize Afghanistan," Corker commented.

The Statesman **12 February 2016**

US Senate votes for expanded sanctions on North Korea

The US Senate has voted unanimously Wednesday to tighten economic sanctions on North Korea, seeking to punish the reclusive Asian nation for its provocative recent nuclear test and rocket launch. The measure, which now must be reconciled with a similar House version that passed last month, would slap sanctions on any person or entity importing goods, technology or training related to weapons of mass destruction, or engaging in human rights abuses, US lawmakers said. It also heaps additional financial pressure on the already-sanctioned hermit regime of leader Kim Jong-un, by aiming at cutting down on money laundering and narcotics trafficking, two major illicit activities believed to be funneling millions of dollars into Kim's inner circle. Senate Republicans Ted Cruz and Marco Rubio both left the presidential campaign trail and returned to Washington for the vote. "Unfortunately, administrations of both political parties have failed to roll back the threat North Korea poses and have allowed this rogue regime to develop even more dangerous capabilities," Rubio said in a statement, adding that Pyongyang now has missiles capable of hitting the United States. "This dictatorial regime must learn that its actions have consequences," added House Speaker Paul Ryan. "North Korea's provocative long-range missile test this past weekend underscores the need to ratchet up pressure on this rogue nation, and the United States will stand shoulder-to-shoulder with our allies against this aggression." Pyongyang shocked the world last month and earned a global rebuke when it announced it had successfully tested a hydrogen bomb. On Sunday, it defiantly launched a satellite-bearing rocket, a move the West sees as a cover for a ballistic missile test in violation of UN Security Council resolutions. Senate Republican Cory Gardner pointed to growing instability on the Korean peninsula as a need for swift action. "Strategic patience has failed," he said on the Senate floor. The bill that passed 96-0 on Wednesday marks "a new policy based on strength, not patience." Senate Democrat Robert Menendez said the vote marked a major step forward in counteracting Pyongyang's nuclear ambitions. "Four nuclear tests, three Kims, two violations of UN Security Council resolutions and one attempt by North Korea to transfer nuclear technology to Syria later -- it is clearly time for the United States to start taking the North Korea challenge seriously," Menendez said.

The Asian Age **12 February 2016**

North's rocket payload a concern: US

A satellite put into orbit by North Korea at the weekend does not appear to be transmitting, but it is worrying that the rocket that took it there delivered tw-ice the payload of Pyong-yang's previous launch, the head of the US Army's missile defence command said on Wednesday. "If you look at the previous launch and the payload it put into orbit … just the increase in weight is I think an important factor," Lt. Gen. David Mann told a seminar on Capitol Hill organised by the Hudson Institute think-tank. "Whenever you are able to put something into orbit, that's significant," Mr Mann said. "I don't think it's transmitting as we speak, but it does reflect a capability that North Korea is trying to leverage in terms of its missile technologies," he said. "That kind of capability and then also the collateral usages for that technology are obviously very, very concerning to nations around the world in terms of ICBM (Intercontinental Ballistic Missile) capabilities." Mr Mann said the payload carried was almost twice as large as that carried in North Korea's previous satellite launch in 2012. He did not give a figure for the weight of the latest satellite, but South Korean officials have put it at 200 kg. Meanwhile, the US Senate voted unanimously on Wednesday to toughen sanctions on North Korea over its nuclear programme, human rights record and cyber activities, as US legislators sought to crack down on Pyongyang for its nuclear tests. The House of Represen-tatives passed a similar bill in January. Differences be-tween the two are expected to be resolved quickly and Senate Democrats said th-ey expected President Barack Obama would sign the measure into law. The Senate vote for the "North Korea Sanctions and Policy Enhancement Act" was 96-0.

The Indian Express **12 February 2016**

To fight migrant traffickers

NATO launches sea mission in Aegean

NATO ships are on their way to the Aegean Sea to help Turkey and Greece crack down on criminal networks smuggling refugees into Europe, the alliance's top commander said on Thursday. Hours after NATO defense ministers agreed to use their maritime force in the eastern Mediterranean to help combat traffickers, Supreme Allied Commander Gen. Philip Breedlove said he was working quickly to design the mission. "We are sailing the ships in the appropriate direction," Breedlove told a news conference, and the mission plan would be refined during the time they were en route. "That's about 24 hours," he said. The plan, which was first raised only on Monday by Germany and Turkey, took NATO by surprise and is aimed at helping the continent tackle its worst migration crisis since World War Two. More than a million asylum-seekers arrived last year. Unlike the EU's maritime mission off the Italian coast, which brings rescued migrants to Europe's shores, NATO will return migrants to Turkey even if they are picked up in Greek waters. Britain's defense minister said that marked a significant change in policy. "They won't be taken to Greece and that's a crucial difference," Michael Fallon told reporters. NATO will also monitor the Turkey-Syria land border for people-smugglers, said NATO Secretary-General Jens Stoltenberg. Although the plan is still to be detailed by NATO generals, the allies are likely to use the ships to work with Turkish and Greek coastguards and the European Union border agency Frontex. "There is now a criminal syndicate that is exploiting these poor people and this is an organized smuggling operation," U.S. Secretary of Defense Ash Carter told reporters. "Targeting that is the way that the greatest effect can be had ... That is the principal intent of this," Carter said. The numbers of people fleeing war and failing states, mainly in the Middle East and North Africa, show little sign of falling, despite winter weather that makes sea crossings even more perilous. A 3 billion euro ($3.4 billion) deal between the EU and Turkey to stem the flows has yet to have a big impact.

SEEKING SHIPS - Germany said it would take part in the NATO mission along with Greece and Turkey, while the United States, NATO's most powerful member, said it fully supported the plan. The alliance's so-called Standing NATO Maritime Group Two has five ships near Cyprus, led by Germany and with vessels from Canada, Italy, Greece and Turkey. Breedlove said NATO would need allies to contribute to sustain the mission over time. Denmark is expected to offer a ship, according to a German government source. The Netherlands may also contribute. "It is important that we now act quickly," German Defence Minister Ursula von der Leyen said. Intelligence gathered about people-smugglers will be handed to Turkish coastguards to allow them to combat the traffickers more effectively, rather than having NATO act directly against the criminals, diplomats said. Greek and Turkish ships will remain in their respective territorial waters, given sensitivities between the two countries. NATO and the EU are eager to avoid the impression that the 28-nation military alliance is now tasked to stop refugees or treat them as a threat. "This is not about stopping or pushing back refugee boats," Stoltenberg said.

The Times of India 12 February 2016

`Find comes exactly 100 years after Einstein's paper'

By Subodh Varma

It's existed since the begin ning of time, when the Universe was created by the Big Bang. Humanity has always accepted it as an immutable force. Newton first explained its workings 328 years ago. It makes apples fall from trees and makes planets go around the Sun or galaxies.It's gravity -the force of attraction between two traction between two bodies. But how exactly does it work?

This question has been answered today .

Scientists announced that they had detected `gravitational waves' that Albert Einstein first proposed 100 years ago. The Universe, he had suggested, is made up of a space-time fabric which gets depressed due to moving matter -like a trampoline gets a bump if you put an iron ball on it. If two very heavy objects -like black holes or neutron stars -collide, gravitational wave ripples spread through the Universe. What LIGO scientists at their sites in Washington and Louisiana achieved was precisely this measurement, thus confirming Einstein's theory .The first direct detection of gravitational waves is a breathtaking discovery . It opens a new window to the universe, theoretical physicist Abhay Ashtekar, professor of gravity and cosmos at Penn State University, US, told TOI. "The first event has shown that there are plenty of black holes of tens of solar masses, thereby resolving the long debated issue of their existence. It's remarkable that the discovery was made exactly 100 years after Einstein's 1916 paper that first showed that general relativity predicts existence of gravitational waves," he said. Explaining how this pathbreaking experiment was done, Ashtekar said laser beams are bounced between mirrors 4km apart. The slightest displacement of the mirrors caused by a passing gravitational wave is measured through a change in the interference pattern. "The sensitivity is so incredibly high that a displacement of the size of a proton can be measured. LIGO detectors are the most sensitive devices on earth," he added.

The Times of India 12 February 2016

`It's all about extracting wave signal from noise'

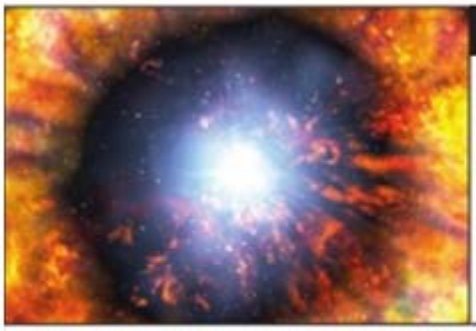
By Meenakshi Rohatgi

The detection of gravitational waves is a big moment and an overwhelming one, said Sanjeev Dhurandhar, one of the key scientists involved in the announcement made at a US National Science Foundation news conference on Thursday . The announcement of detection of gravitational waves or ripples produced by cosmic collisions of black holes is the first ever. The existence of such a wave was hypothesized by Albert Einstein in his famous Theory of General Relativity . "In 1916, Einstein had thought that detection of these waves was extremely difficult, but technology has improved," said Dhurandhar. "But even after so many years, it is still a difficult task. The waves are very weak and one has to measure the distance between them." Dhurandhar has worked on this subject since 1987. "The major component of my work is in the data analysis of gravitational wave signals embedded in the noise of the detector," he said. "The aim is to extract the signal from the noise. Signals are buried inside noise and extracting it involves a lot of mathematics and statistics," he added. The professor emeri tus at the Inter-Uni versity Centre for Astronomy and Astrophysics (IU CAA) who loves mathematics and statistics joined the institute in 1989 "when no one believed in the concept on gravitational waves". It was astrophysicist and IUCAA founder-director Jayant Narlikar who took Dhurandhar in. "In the initial days there were very few people who researched in this field and they would be laughed at by others," said Somak Raychaudhury, director, IUCAA. "Narlikar brought Dhurandhar here at IUCAA specially to continue research in this field." An alumnus of Pune's Fergusson College, Dhurandhar started his career with general relativity before the thermodynamics of blackholes sucked him in. "This is a huge announcement for the entire scientific community and just the beginning now for further discoveries and a new branch of astronomy ," Dhurandhar said on Thursday's announcement.

The Times of India 12 February 2016

Dear Gravity, we hear you now

HOW WILL THE DISCOVERY CHANGE SCIENCE & OUR WORLD?



WE WILL BE ABLE TO...

- For the first time **receive cosmic signals** that were previously **entirely hidden** from us, revealing an entirely new layer of reality
- **Track supernovas** hours before they're visible to any telescope because the waves arrive at Earth long before any light does, giving astronomers time to point telescopes like Hubble in that direction
- **Measure the frequency of major cosmic phenomena** such as supernovas or merger of black holes — events that shape star systems and galaxies
- **Hear the noises produced by gravitation of celestial bodies** on the fabric of space-time. Since the star or black hole does not stop these waves, which move at the speed of light, they come right to us and we can therefore make models... to distinguish and detect their signatures

India's imprint in landmark LIGO project

Indian groups contributed significantly to the historic search for gravitational waves. The key tasks they carried out included the following: Understanding the response of the LIGO detector to the signals and terrestrial influences Bounding the orbital eccentricity and estimating the mass and spin of the final black hole Estimating energy and power radiated during merger Confirming that observed signal agrees with Einstein's Theory of Relativity Searching for a possible electromagnetic counterpart using optical telescopes. Some of these jobs were carried out in high performance computing facilities at IUCAA, Pune and ICTS, Bengaluru. The group, led by Bala Iyer at the Raman Research Institute in collaboration with scientists in France, had pioneered the mathematical calculations used to model gravitational wave signals from orbiting black holes and neutron stars. Another group led by Sanjeev Dhurandhar at IUCAA initiated and carried out foundation work on developing data analysis techniques to detect these weak gravitational wave signals buried in the detector noise by looking for the best match between the calculated waveforms and the detector signal Meanwhile, the director of Pune's Inter-University Centre for Astronomy and Astrophysics (IUCAA) Somak Raychaud hury said he was looking forward to the launch of a similar observatory in India. A similar facility is being planned in India in a direction opposite to the two American observatories in Louisiana and Washington. "We need detectors in many more directions so that the exact route of the gravitational wave can be traced... hence, the proposal to set up an observatory in India," Raychaudhury told TOI. LIGO-India is being envisaged as a collaborative project between a consortium of Indian research institutions, the LIGO Lab in the US and its other international partners.The Centre has offered a funding of Rs 1,200 crore for the project. While the LIGO lab is set to provide the complete design and the key detector components, Indian scientists will be responsible for the infrastructure to install the detector at a suitable site in India.

The Times of India 12 February 2016

`With this find, we'll be able to see black holes'

By Swati Shinde Gole

"I never thought I would see this detection of gravitational waves happen in my lifetime," director of Inter-University Centre for Astronomy and Astrophysics (IUCAA), Somak Raychaudhury , said on Thursday . IUCAA is one of 15 institutes in the country associated with the LIGO project, bit the centre in cubated the project since the beginning. Raychaudhury told TOI, "IUCAA was involved in the project from the time gravitational waves were not taken seriously in India. That was the time when astrophysicist Jayant Narlikar brought Sanjeev Dhurandhar to IUCAA to study the waves." Raychaudhury said that while LIGO observations began in September last year, the results came in as early as the first week after observations began. "This discovery is important and pathbreaking because claims were made in the past regarding detection of gravitational waves, but they were proved wrong." The discovery has validated the understanding of gravity and dawn of a new physics. "In principle, right now with this discovery we can see extreme things like black holes and have got another tool like the gravitational waves to study the universe.It has also given way to gravitational astronomy and how to study universe," Raychaudhary said.

Scientists spot elusive space-time ripples

By R. Ramachandran

Gravitational waves from two black holes reach Earth.

The highly elusive 'gravitational waves' have finally been detected. Understandably, and justifiably, there is great elation within the global physics community, astrophysicists and cosmologists in particular. After decades of search for these ripples in space-time, which Albert Einstein predicted exactly 100 years ago, scientists working with the gigantic optical instruments in the U.S. called LIGO [Laser Interferometer Gravitational-wave Observatory], have detected signals of gravitational waves emanating from two merging black holes 1.3 billion light years away arriving at their instruments on the Earth. That is to say, this cataclysmic event of two black holes merging occurred 1.3 b yrs ago, when multi-cellular organisms were just beginning to form on the Earth, the gravitational waves from which are being received now on the Earth. Indeed, "We have detected gravitational waves," were the opening remarks of David Reitze, the Executive Director of LIGO at Caltech, while making the announcement of the discovery to the media at the National Press Club in Washington that was received with rousing ovation. The announcement was beamed across all the laboratories of the world particip ating in the LIGO Science Collaboration (LSC). LSC comprises about 1000 scientists from 16 countries.

Gravitational wave astronomy's finest moment

The event where the announcement of the detection of gravitational waves was made was transmitted live at the Inter-University for Astronomy and Astrophysics (IUCAA) here. Representatives of the collaborating Indian institutions were present. The announcement was received with thunderous applause here too because it was a proud moment for the Indian gravitational wave community as well. Groups at IUCAA and the Raman Research Institute (RRI), Bangalore, have made significant contribution in the analysis of the LIGO data, which has enabled it to be pinned down to a coalescence of two black holes consistent with Einstein's theory. As many as 34 Indian scientists are contributing authors in the landmark paper about the discovery that has been published online in the journal Physical Review Letters. Although indirect evidence for the existence of gravitational waves had been seen from the decaying orbital period of objects called binary pulsars - which Russel Hulse and Joseph Taylor discovered in 1974 and for which they were awarded the Nobel Prize in 1993 - a direct detection of gravitational waves had till now proved to be extremely difficult. This required enormous advances in technology to enable instruments with sensitivity sufficient to detect distortions of space-time as tiny as 10-18 m, which is a thousandth of the diameter of a proton, and less. That is like measuring the distance between the Earth and the nearest galaxy Andromeda, which is 2.5 million light years away, to hair-width precision. This is what the upgraded or advanced LIGO, which began its first run only in September 2015, achieved and within days it made this spectacular literally earth-shaking discovery. The gravitational wave signal struck the detector on September 14, 2015, and the signal had the unmistakable stamp of a black-hole binary merger, a phenomenon that has been extensively studied through simulations. The LIGO is the most precise instrument that has ever been built. It consists of two identical L-shaped laser interferometer systems, one at Hanford in Washington and one at Livingston in Louisiana. There are two systems to ensure that detection at both the instruments that are about 3000 km apart with the calculated time delay ensures that the detected signal is not due to any spurious seismic signal or any other local vibration. Each of the arms of the L is a 4 km tunnel in which laser beams bounce back and forth between two highly sensitive suspended mirrors. The laser beams are tuned to be perfectly in opposite phase so that there is total interference when the beams arrive at the intersection of the arms and no light passes through the beam splitter at the intersection into the photo-detector behind. But when a gravitational wave passes through the detector, the space-time gets distorted much like a squeezed ball, oscillating between the two states compressed in one direction and elongated in the other. So the effect of this oscillatory compression of one arm and elongation of the other is that there is no total cancellation of the interfering laser beams and a net signal gets through to the photodetector. According to Gabriela Gonzalez, the chief spokesperson of the LIGO at Livingston, the signal was received precisely 7 miliseconds later as calculated. "The coincidence is remarkable" she said. The total signal lasted for about 0.4 s with the "ringing down" that is characteristic of two orbiting black holes in-spiralling towards each other, shrinking of the orbit, merger of the two, coalescence and finally settling down as a single black hole, he said. The data is consistent with one black hole with 36 solar masses merging with another of 29 solar masses giving rise to a single black hole of 62 solar masses. A total energy of 1049

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Scientists spot elusive space-time ripples

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watts, equivalent to the missing 3 solar masses, has been radiated away as gravitational waves. This would be the most luminous astronomical source ever observed noted P. Ajith of the International Centre for Theoretical Sciences, Bangalore, who is part of LIGO collaboration and was involved in the analysis. According to him, the probability of it being a false alarm is less than 2x10-7. The biggest victory for the Indian gravitational wave astronomy community as a result of Thursday's discovery has been the in-principle approval from Prime Minister Narendra Modi for setting up of the Indian component of the advanced LIGO, which has been hanging fire for more than three years since the proposal was approved by the National Science Foundation (NSF), U.S.

The Hindu 12 February 2016

Gravitational waves Explained

What are gravitational waves?

Gravitational waves are small ripples in space-time that are believed to travel across the universe at the speed of light. They are like tiny waves on a lake - from far away, the lake's surface looks glassy smooth; only up very close can the details of the surface be seen. They were predicted to exist by Albert Einstein in 1916 as a consequence of his General Theory of Relativity.

What does Einstein say about gravity?

While Sir Isaac Newton visualised gravitational force as a pulling force between objects, Albert Einstein opined it to be a pushing force due to the curvature of four dimensional spacetime fabric. The curvature of spacetime stems from the dent heavy objects produce on spacetime fabric, which can be compared to the dent one could see on a plastic sheet when a massive ball is placed.

How are these waves detected?

Scientists have been trying to detect them using two large laser instruments in the United States, known together as the Laser Interferometer Gravitational-Wave Observatory (LIGO), as well as another in Italy. The twin LIGO installations are located roughly 3,000 km apart in Livingston, Louisiana, and Hanford, Washington. Having two detectors is a way to sift out terrestrial rumblings, such as traffic and earthquakes, from the faint ripples of space itself. The LIGO work is funded by the National Science Foundation, an independent agency of the U.S. government.

Why is the study of gravitational waves important?

Discovery of gravitational waves would represent a scientific landmark, opening the door to an entirely new way to observe the cosmos and unlock secrets about the early universe and mysterious objects like black holes and neutron stars.

Did scientists ever detect gravitational waves?

Although, physics supports the existence of gravitational waves, the strength of such waves even due to astronomically heavy bodies is awfully weak to be detected. On March 17, 2014, Harvard-Smithsonian Centre for Astrophysics erroneously claimed discovery of gravitational waves. The Harvard group, working at BICEP2 (Background Imaging of Cosmic Extragalactic Polarisation) telescope, had reported that they had observed a twist in the polarisation of ancient light that goes back to the time of the big bang. But within a month, studies pointed out flaws in the study.

Reuters

The collision of two black holes holes - a tremendously powerful event detected for the first time ever by the Laser Interferometer Gravitational-Wave Observatory, or LIGO - is seen in this still image from a computer simulation released in Washington February 11, 2016. Photo courtesy: Caltech/MIT/LIGO Laboratory

The Hindu **12 February 2016**

Distortions in curvature of space-time

By R. Ramachandran

Just as waves spread out when a boat moves in water or a stone is thrown in a pond, gravitational waves are distortions in the curvature of space-time caused by motions of matter that propagate with the speed of light. Unlike waves that one is familiar with, such as sound and light, gravitational waves do not travel through space; the fabric of space-time itself is oscillating in response to the disturbances caused by moving masses. According to Einstein's theory, the presence of a mass warps the space-time structure in its neighbourhood just as a ball does when placed on a rubber sheet . The curvature of the warp determines its gravitational force. So when large masses move around or rapidly accelerate, the disturbance causes distortions in the static but warped space-time. A gravitational wave is this travelling distortion of space-time geometry itself.

The Indian Express **12 February 2016**

Gravitational waves: They scorned Sanjeev Dhurandhar 3 decades ago, today he is the toast of modern science

By Anuradha Mascarenhas

He led the solo Indian group in the initial era of the Laser Interferometer Gravitational-Wave Observatory (LIGO) for a decade. Three decades before international scientists announced they have detected the gravitational waves Albert Einstein had proposed, a young scientist was already talking about the idea. Sanjeev Dhurandhar's ideas were then greeted with incredulity but, on Thursday, he was the toast of the scientific community who gathered at the Inter-University Centre of Astronomy and Astrophysics (IUCAA) in Pune. Prof Jayant Narlikar, former IUCAA director, recalled the 1980s. "Those were the days when everyone was talking about electromagnetic waves and here was this young man talking about theories and experiments related to gravitational waves," he said, as he introduced the Pune-born Dhurandhar as one of the 1,000 key scientists involved in detecting gravitational waves 100 years after Einstein had proposed their existence. "In the 1980s, Dhurandhar was told by senior colleagues that he had no credibility when this remarkable individual had proposed a model with a theoretical backup to explore gravitational waves," Prof Narlikar said. Ajit Kembhavi, another former IUCAA director, nodded in agreement. He said Dhurandhar never gave up and in the process trained several students and focused his research in this area. Today most of Dhurandhar's students are with gravitational wave groups in various countries and have been involved in this exciting discovery, Kembhavi said. "I still remember how in the 1980s people at Oxford and Cambridge used to scorn Dhurandhar and his group then," said Prof Somak Raychaudhury, the current director of IUCAA. "But today 90 per cent of the researchers abroad working on gravitation waves have been his students and now heading their teams that has led to this pathbreaking discovery." Dhurandhar himself has put the incredulity he faced behind him.

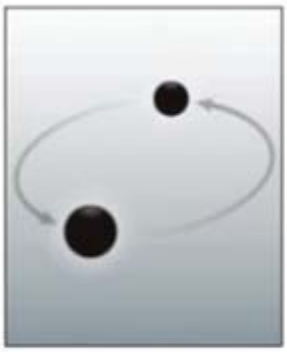
"It was only natural not to believe," said the Pune-born scientist. "We did not have enough technology 25 years ago to detect such waves. So I do not really blame people who did not believe us. All I can say is that I am overwhelmed. This is such good science - a new discipline of physics - I say."

What they did

The group led by Dhurandhar at IUCAA had initiated work on developing techniques for detection of weak signals which would eventually lead to detection of gravitational waves. He led the solo Indian group in the initial era of the Laser Interferometer Gravitational-Wave Observatory (LIGO) for a decade. The Indian Initiative in Gravitational-Wave Observations (IndIGO), set up in 2009, involves 61 scientists from nine institutions - CMI Chennai, ICTS-TIFR Bengaluru, IISER-Kolkata, IISER-Trivandrum, IIT Gandhinagar, IPR Gandhinagar, IUCAA Pune, RRCAT Indore and TIFR Mumbai. The discovery paper has 35 authors from these institutions. India's current "gravitational wave community" has engaged in research over three decades at several institutes. Prominently cited in the discovery paper is the theoretical work that combined black holes and gravitational waves, published by C V Vishveshwara in 1970. At IUCAA, Narlikar, Anil Kakodkar and Vishveshwara were among those who thumped their desks and cheered as they watched a live broadcast of David Reitze, executive director of LIGO-US, making the historic announcement - "Till now we have been deaf. Now the universe has spoken to us through gravitational waves." The congratulatory handshakes after that were unceasing. "I never thought gravitational waves would be detected during my working period here" said Prof Raychaudhury. "We have validated physics. This is a new era, dawn of new physics."

Hearing a gravitational wave

Predicted by Einstein 100 years ago, gravitational waves have been directly detected for the first time. LIGO, the Laser Interferometer Gravitational-Wave Observatory, heard the sound of black holes colliding. A look at how science proved Einstein right:

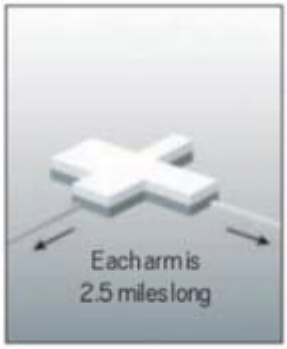


TWO BLACK HOLES
About 1.2 billion years ago in a distant galaxy, a pair of black holes circled each other. The larger black hole was 36 times the mass of our sun, and the smaller one 29 times.

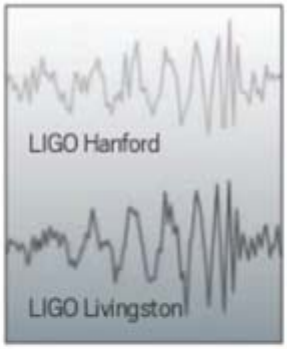
COLLISION
High gravity accelerated the black holes to half the speed of light, pulling them closer and carving distortions in space and time. The pair collided and merged into an irregular shape.

RING DOWN
The blob smoothed into a sphere, a process called ring down. 3 solar masses' worth energy vaporised in gravitational waves, leaving a new black hole 62 times the mass of the sun.

THE WAVES
The invisible waves rippled outward at the speed of light, fading with distance. When they finally reached Earth, the distortions were too small to be measured.



DETECTION
LIGO is a pair of L-shape observatories 1,900 miles apart. Passing gravitational waves push and pull the arms, changing the length of tunnels by less than the width of a proton.



A CHIRP
Sept. 14. LIGO detectors read first vibrations from a gravitational wave. Translated to sound, it was a short chirp, the billion-year-old echo of the collision of those two black holes.

The Hindustan Times **12 February 2016**

India to get gravitational wave observatory

India will house world's third Laser Interferometer Gravitational Observatory (LIGO-India) to detect gravitational waves, similar to the two detectors in the US. Maharashtra and Madhya Pradesh are among the states shortlisted for the experiment. By 2022, India will be one of the countries, including the US, Italy and Japan, to play a major role in understanding Albert Einstein's theory of general relativity. Even as a final cabinet nod is awaited, soon after the announcement, Prime Minister Narendra Modi tweeted: "Hope to make an even bigger contribution with an advanced gravitational-wave detector in the country." The government will have to fund the ` 1,260-crore observatory project over 15 years. The Planning Commission has cleared the project, which has been studied by the department of atomic energy and the department of science and technology. General relativity explained gravity in terms of the curvature of four-dimensional spacetime, and predicted the existence of black holes. The observatory will help spot more gravity waves, the discovery of which will prove general relativity beyond doubt. The US has two observatories known as the LIGO, while Italy has the third called the Virgo Interferometer and Japan is constructing another one. If the Indian observatory - LIGO-India - materialises, the country will join the global network of gravitational wave detectors. Establishing an observatory in India assumes importance because the further the distance between the observatories, the greater will be the accuracy in locating gravity waves. "Without LIGO-India, we can't locate where the event happened. Therefore, three identical telescopes are needed, said professor Tarun Souradeep, of the Inter University Centre for Astronomy and Astrophysics in Pune. The Indian Institute of Plasma Research in Gandhi Nagar is among the lead institutes to build components for the Indian detector for central data acquisition and control for the futuristic machine.

The Times of India **12 February 2016**

It's like a new world opening up for us: Indian scientist

By Ardhra Nair

Varun Bhalerao from InterUniversity Centre for Astronomy and Astrophysics (IUUCA), who is also a part of the gravitational waves project, has an interesting way of explaining the discovery of gravitational waves to a layman."Think of a person with a hearing impairment. If you speak in front of him, he can see your lips move but can't hear you. Imagine a situation when he hears you for the first time. He'll feel an entire world opening up in front of him. That is how this finding is for the science world," says Bhalerao. Varun's part in the entire discovery has been to look after the optical waves associated with gravitational waves in an emission. "When two neutron stars merge, a lot of optical waves, gravitational waves, X-rays, etc, are emitted. All these waves are related to each other. My part was to look after the optical side of it," said Varun. "While we may not understand the importance of gravitational waves on a day-to-day basis, we have to understand that even the common GPS system uses relativistic corrections in a way to find out your exact location, and this takes into account gravitational waves." Varun explained that not only does the measurement of gravitational waves validate Einstein's theory of relativity, it also gives new insight into quantum mechanics and Newton's laws, etc. "On a macro scale, quantum mechanics doesn't make sense to us as it hardly affects us. But on a very nano level, it makes a hell of a lot of difference. For example, even during the LIGO experiment, we had used two arms each of 4km. We found that when gravitational waves are passed, relative distance between the arms changes by a distance of 10,000th of a nucleus of an atom. That is not a distance the human eye can discern. But when talk about detecting the movement of two black holes around each other or are studying stars, it makes a lot of difference," said Varun.

The Asian Age 12 February 2016

Drones to help rescue people lost in the wild

Scientists have developed an artificial intelligence software for drones to autonomously recognise and navigate through complex environments, and help quickly rescue people lost in forests and mountain areas. The advance means drones could soon be used in parallel with rescue teams to accelerate the search for people lost in the wild, researchers said. Every year, thousands of people lose their way in forests and mountain areas. Drones can effectively complement the work of rescue services teams, researchers said. Since they are inexpensive and can be rapidly deployed in large numbers, they substantially reduce the re sponse time and the risk of injury to missing persons and rescue teams alike. Researchers, including those from the Dalle Molle Institute for Artificial Intelligence and the University of Zurich developed a software that allows drones to autonomously detect and follow forest paths. "While drones flying at high altitudes are already being used commercially, drones cannot yet fly autonomously in complex environments, such as dense forests," said Davide Scaramuzza from the University of Zurich. "In these environments, any little error may result in a crash, and robots need a powerful brain in order to make sense of the complex world around them," Scaramuzza said. The drone observes the environment through a pair of small cameras, similar to those used in smartphones. "Instead of relying on sophisticated sensors, their drone uses very powerful artificial-intelligence algorithms to interpret the images to recognise man-made trails," said Alessandro Giusti from the Dalle Molle Institute for Artificial Intelligence in Switzerland. If a trail is visible, the software steers the drone in the corresponding direction. "Interpreting an image taken in a complex environment such as a forest is incredibly difficult for a computer," said Giusti. Researchers used a Deep Neural Network, a computer algorithm that learns to solve complex tasks from a set of "training examples," much like a brain learns from experience. In order to gather data to "train" their algorithms, the team hiked several hours along different trails in the Swiss Alps and took more than 20 thousand images of trails using cameras attached to a helmet. When tested on a new, previously unseen trail, the deep neural network was able to find the correct direction in 85 per cent of cases; in comparison, humans faced with the same task guessed correctly 82 per cent of the time.

Intel chief warns of 'homegrown' security threat

Washington: Attacks by "homegrown" Islamist extremists are among the most imminent security threats facing the United States in 2016, along with dangers posed overseas by Islamic State and cyber security concerns, the top U.S. intelligence official said on Tuesday. In his annual assessment of threats to the United States, Director of National Intelligence James Clapper warned that fast-moving cyber and technological advances "could lead to widespread vulnerabilities in civilian infrastructures and U.S. government systems." In prepared testimony before the Senate Armed Services and Intelligence Committees, Clapper outlined an array of other threats from Russia and North Korean nuclear ambitions to instability caused by the Syrian migrant crisis. "In my 50 plus years in the intelligence business I cannot recall a more diverse array of crises and challenges than we face today," Clapper said. Islamic State poses the biggest danger among militant groups because of the territory it controls in Iraq and Syria, and is determined to launch attacks on U.S. soil, Clapper said. It also has demonstrated "unprecedented online proficiencies," he said.

James Clapper

— Reuters

GSMA issues first Internet of Things security guidelines

On Tuesday the organisation representing the world's mobile operators, the GSMA, published its first Internet of Things security guidelines. Developed in association with and supported by the entire industry, the guidelines have been created to ensure best practice when it comes to cyberthreats, data protection and other potential security issues surrounding the emerging consumer technology. "As billions of devices become connected in the Internet of Things, offering innovative and interconnected new services, the possibility of potential vulnerabilities increases," said Alex Sinclair, Chief Technology Officer, GSMA. "These can be overcome if the end-to-end security of an IoT service is carefully considered by the service provider when designing their service and an appropriate mitigating technology is deployed. A proven and robust approach to security will create trusted, reliable services that scale as the market grows." As well as make devices and services safer, the guidelines will also help accelerate the development of further services and therefore the speed at which consumers and businesses embrace the technology. According to Gartner, by the end of 2016 there will already be 6.4 billion 'things' connected to the internet and that by the end of the decade, that number will have jumped to 20.8 billion.

Deccan Herald **12 February 2016**

Microsoft takes data centre underwater

This eliminates one of the technology industry's most expensive problems: the air conditioning bill

By John Markoff

Taking a page from Jules Verne, researchers at Microsoft believe the future of data centres may be under the sea. Microsoft has tested a prototype of a self-contained data centre that can operate hundreds of feet below the surface of the ocean, eliminating one of the technology industry's most expensive problems: the air conditioning bill. Today's data centres, which power everything from streaming video to social networking and email, contain thousands of computer servers generating lots of heat. When there is too much heat, the servers crash. Putting the gear under cold ocean water could fix the problem. It may also answer the exponentially growing energy demands of the computing world because Microsoft is considering pairing the system either with a turbine or a tidal energy system to generate electricity. The effort, code-named Project Natick, might lead to strands of giant steel tubes linked by fibre optic cables placed on the seafloor. Another possibility would suspend containers shaped like jelly beans beneath the surface to capture the ocean current with turbines that generate electricity. "When I first heard about this I thought, 'Water ... electricity, why would you do that?' " said Ben Cutler, a Microsoft computer designer who is one of the engineers who worked on the Project Natick system. "But as you think more about it, it actually makes a lot of sense." Such a radical idea could run into stumbling blocks, including environmental concerns and unforeseen technical issues. But the Microsoft researchers believe that by mass producing the capsules, they could shorten the deployment time of new data centres from the two years it now takes on land to just 90 days, offering a huge cost advantage. The underwater server containers could also help make Web services work faster. Much of the world's population now lives in urban centres close to oceans but far away from data centres usually built in out-of-the-way places with lots of room. The ability to place computing power near users lowers the delay, or latency, people experience, which is a big issue for web users. "For years, the main cloud providers have been seeking sites around the world not only for green energy but which also take advantage of the environment," said Larry Smarr, a physicist and scientific computing specialist who is director of the California Institute for Telecommunications and Information Technology at the University of California, San Diego. Driven by technologies as varied as digital entertainment and the rapid arrival of the Internet of Things, the demand for centralised computing has been growing exponentially. Microsoft manages more than 100 data centres around the globe and is adding more at a rapid clip. The company has spent more than $15 billion on a global data centre system that now provides more than 200 online services. In 2014, engineers in a branch of Microsoft Research known as New Experiences and Technologies, or NExT, began thinking about a novel approach to sharply speed up the process of adding new power to cloud computing systems. "When you pull out your smartphone you th-ink you're using this miraculous little computer, but actually you're using more than 100 computers out in this thing called the cloud," said Peter Lee, corporate vice president for Microsoft Research and the NExT organisation. "And then you multiply that by billions of people, and that's just a huge amount of computing work." The company recently completed a 105-day trial of a steel capsule - 8 feet in diameter - that was placed 30 feet underwater in the Pacific Ocean off the central California coast near San Luis Obispo. Controlled from offices here on the Microsoft campus, the trial proved more successful than expected. The researchers had worried about hardware failures and leaks. The underwater system was outfitted with 100 different sensors to measure pressure, humidity, motion and other conditions to better understand what it is like to operate in an environment where it is impossible to send a repairman in the middle of the night. The system held up. That led the engineers to extend the time of experiment and to even run commercial data-processing projects from Microsoft's Azure cloud computing service. The research group has started designing an underwater system that will be three times as large. It will be built in collaboration with a yet-to-be-chosen developer of an ocean-based alternative-energy system. The Microsoft engineers said they expected a new trial to begin next year, possibly near Florida or in Northern Europe, where there are extensive ocean energy projects underway. The first prototype, affectionately named "Leona Philpot" - a character in Microsoft's

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Microsoft takes data centre underwater

Halo video game series - has been returned, partly covered with barnacles, to the company's corporate campus here. It is a large white steel tube, covered with heat exchangers, with its ends sealed by metal plates and large bolts. Inside is a single data centre computing rack that was bathed in pressurised nitrogen to efficiently remove heat from computing chips while the system was tested on the ocean floor.

No maintenance

The idea for the underwater system came from a research paper written in 2014 by several Microsoft data centre employees, including one with experience on a navy submarine. Norman Whitaker, managing director for special projects at Microsoft Research and former deputy director at the Pentagon's Defence Advanced Research Projects Agency (DARPA), said the underwater server concept was an example of what scientists at DARPA called "refactoring," or completely rethinking the way something has traditionally been accomplished.

Even if putting a big computing tube underwater seems far-fetched, the project could lead to other innovations, he said. For example, the new undersea capsules are designed to be left in place without maintenance for as long as five years. That means the servers inside it have to be hardy enough to last that long without needing repairs. That would be a stretch for most servers, but they will have to improve in order to operate in the underwater capsule - something the Microsoft engineers say they are working on. They're also rethinking the physical alignment of data centres. Right now, servers are put in racks so they can be maintained by humans. But when they do not need maintenance, many parts that are just there to aid human interaction can be removed, Whitaker said. In the first experiment, the Microsoft researchers said they studied the impact their computing containers might have on fragile underwater environments. They used acoustic sensors to determine if the spinning drives and fans inside the steel container could be heard in the surrounding water. What they found is that the clicking of the shrimp that swam next to the system drowned out any noise created by the container. One aspect of the project that has the most obvious potential is the harvest of electricity from the movement of seawater. This could mean that no new energy is added to the ocean and, as a result, there is no overall heating, the researchers asserted. In their early experiment the Microsoft engineers said they had measured an "extremely" small amount of local heating of the capsule. "We measured no heating of the marine environment beyond a few inches from the vessel," Lee said.