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समाचार पत्रों से चयित अंश Newspapers Clippings

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Technologies, Defence Technologies, Defence Policies,
International Relations and Science & Technology

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Wed, 27 Apr 2022

आकाश मिसाइल के एडवांस वर्जन का सफल परीक्षण, जमीन से आसमान में टारगेट को किया ध्वस्त

जैसलमेर में आज आकाश मिसाइल के एडवांस वर्जन का परीक्षण किया जो मानकों पर पूरी तरह से सफल रहा। यह परीक्षण पोखरण फील्ड फायरिंग रेंज में किया गया। यह मिसाइल जमीन से आसमान में मार करने में सक्षम है। आकाश मिसाइल का परीक्षण डीआरडीओ और आर्मी के अधिकारियों की मौजूदगी में हुआ। जानकारी के मुताबिक मिसाइल ने टारगेट को सफलता पूर्वक ध्वस्त कर दिया। यह मिसाइल दुश्मन के विमानों का पता लगाकर ध्वस्त करने में सक्षम है। यह मिसाइल प्रणाली विमान को 30 किमी दूर और 18,000 मीटर ऊंचाई तक टारगेट कर सकती है। परीक्षण सफल होने के बाद DRDO और आर्मी के अधिकारियों ने एक-दूसरे को बधाई दी।

<https://www.indiatv.in/india/national/akash-missile-advanced-version-successful-test-destroying-target-in-the-sky-from-the-ground-drdo-army-2022-04-27-847385>



Tue, 26 Apr 2022

India's TAPAS MALE UAV inches closer to production

India's TAPAS-BH-201 UAV is nearing production, a report by *The Week* has revealed. The medium altitude long endurance (MALE) UAV is being developed by the Aeronautical Development Establishment (ADE). Hindustan Aeronautics Limited (HAL) will produce five TAPAS drones for user trials. TAPAS, also known as Rustom-II, is primarily meant for surveillance. For this, it has payloads such as a synthetic aperture radar, electro-optical system, ELINT and COMINT suites amongst others. However the aircraft is capable of being armed with limited payloads. It had recently achieved an altitude of 28,000ft and 18 hours of endurance. The

aim is to achieve altitude of 30,000ft and 24 hours of endurance. Night landing trials have also begun. S. Rajagopal, project director of TAPAS told *The Week* that TAPAS is still “slightly short” of the armed forces requirements.

TAPAS program which officially began in 2011, had its maiden flight in 2016. Six prototypes were developed for flight testing. One of the twin engine, 2.85 ton all-up weight UAVs had crashed in September 2019 due to link loss and turbulence. The UAVs had conducted 70 flight trials at that point. A seventh prototype, equipped with more powerful 180hp Austro AE330 E4T engines, SATCOM links and other improvements, replaced the crashed air frame. Since then the UAVs have completed about 50 flight trials. TAPAS is now heading for certification after which HAL plans to integrate and deliver five air frames by April 2023. ADE has already readied flight control systems and other avionics. Over 10 engines have been ordered. Work on engine interface mountings and various other subsystems is progressing.

A 220hp engine is being developed by DRDO in association with Lakshmi Machine Works to replace the imported engines. A total of 76 TAPAS drones are expected to be bought by the Indian armed forces, with 60 by the Army, 12 by IAF and four by the Navy. Meanwhile, ADE is looking to initially manufacture four Archer UAVs, also called Rustom-I. Archer has a range of over 200km and endurance of about 10 hours. The initial armament for both TAPAS and Archer is expected to be the Helina ATGM. ADE has also initiated development of a single engine twin boom UAV. ADE is also manufacturing and testing multiple Stealth Wing Flying Test-beds (SWiFT), a one ton class scaled technology demonstrator for India’s large Remotely Piloted Strike Aircraft (RPSA) UCAV program. While India has been developing and inducting multiple small UAVs, its larger UAV developments have been plagued by delays.

<https://www.overtdefense.com/2022/04/26/indias-tapas-male-uav-inches-closer-to-production/>

DRDO On Twitter



#DRDOUpdates | On 26 Apr, a bilateral meeting was held between Mr Greg Moriarty @DeptDefence of Australian Govt and Dr G Satheesh Reddy, Secretary Dept of Defence R&D in New Delhi to discuss the way forward for **#collaboration** in **#advanced** and **#emerging** defence technologies



9:31 PM · Apr 26, 2022 · Twitter for iPhone



DRDO is participating in Asian Defence & Security - 2022 at Manila, Philippines during 27-29th April 2022. Exhibiting state of art systems based on advanced technologies.

#adas2022
#AtmaNirbhartaInDefence
@PMOIndia @DefenceMinIndia
@SpokespersonMoD



4:21 PM · Apr 26, 2022 · Twitter Web App



An advanced technology project awarded by @DrdoTdf 'AI based detection of a person based on physiological parameters' to Ingenious Research Solutions Pvt Ltd, a #startup incubated at @AmityUni.

#AtmanirbhartaInDefence
#IndianIndustry
@PMOIndia @DefenceMinIndia
@SpokespersonMoD

3:47 PM · Apr 26, 2022 · Twitter for iPhone

Defence News

Defence Strategic: National/International



पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Tue, 26 Apr 2022 5:11 PM

राष्ट्रीय स्तर के लॉजिस्टिक्स सेमिनार 'लॉजिस्म वायु - 2022' का आयोजन दिल्ली में किया जाएगा

भारतीय वायुसेना द्वारा 28 अप्रैल 2022 को नई दिल्ली के वायु सेना सभागार में एक राष्ट्रीय स्तर के लॉजिस्टिक्स सेमिनार का आयोजन किया जा रहा है। वायु सेना प्रमुख इस सेमिनार का शुभारंभ करेंगे और उद्घाटन सत्र के दौरान मुख्य भाषण भी देंगे। इस सेमिनार का विषय है- 'ऑर्केस्ट्रेटिंग लॉजिस्टिक्स सपोर्ट फॉर एयर कॉम्बैट ऑपरेशंस'। सरकार, उद्योग और थिंक टैंक के प्रमुख विशेषज्ञ, राष्ट्रीय

लॉजिस्टिक्स नीति और इसमें एआई, एमएल, ब्लॉकचैन और आईओटी जैसी मौजूदा प्रौद्योगिकियों के उपयोग पर विचार करेंगे। इन आयामों को जब सैन्य लॉजिस्टिक्स में शामिल किया जायेगा, तो इसका भारतीय वायुसेना के कार्य संचालन में आपूर्ति श्रृंखला प्रबंधन के तरीके पर एक परिवर्तनकारी प्रभाव पड़ेगा। सेमिनार में प्रमुख सहयोगियों के साथ अंतर्राष्ट्रीय लॉजिस्टिक्स सहायता समझौतों को अंतिम रूप देने के साथ- साथ लॉजिस्टिक्स डिप्लोमेसी पर भी एक सत्र होगा, जिससे आपूर्ति श्रृंखला और अंतर-संचालन को एक बड़ा प्रोत्साहन मिल सकता है।

<https://pib.gov.in/PressReleasePage.aspx?PRID=1820259>



Press Information Bureau
Government of India

Ministry of Defence

Tue, 26 Apr 2022 5:11 PM

National level logistics seminar 'Logisem Vayu - 2022' to be held in Delhi

A national level Logistics seminar is being organised by IAF on 28 Apr 22 at Air Force Auditorium, New Delhi. The seminar will be inaugurated by the CAS, who shall also deliver the keynote address for the Inaugural Session. The theme of the seminar is 'Orchestrating Logistics Support for Air Combat Operations'.

Prominent subject matter experts from the Government, Industry and think-tanks would delve upon aspects pertaining to National Logistics Policy and absorption of current disruptive technologies such as AI, ML, Blockchain and IoT. These facets, when incorporated in field of military logistics, would have a transformational impact on the way IAF conducts its business of supply chain management in support of its operations. The seminar shall also have a session on logistics diplomacy, by entering into International Logistics Support Agreements with key allies, that could give a big boost to the supply chain and inter-operability.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1820177>



पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Tue, 26 Apr 2022 5:51 PM

वायुसेना ने बागडोगरा हवाई अड्डे से यात्री उड़ानों के संचालन को दोबारा शुरू करने के लिए तैयार किया 26 अप्रैल 2022 से नागरिक विमान का परिचालन फिर शुरू किया जाएगा

भारतीय वायु सेना ने बागडोगरा हवाई अड्डे के रनवे पर व्यापक पुनर्निर्माण (रिसर्फेसिंग) कार्य किया है, जिससे नागरिक विमान 26 अप्रैल, 2022 की सुबह से अपने परिचालन को फिर से शुरू कर सकें। इस रनवे पर पहला नागरिक विमान आज सुबह लगभग 8:00 बजे उतरा। इस रनवे के मध्य हिस्से पर पुनर्निर्माण का काम तय समय पर पूरा किया गया है। तीन लचीली (बिटुमिनस) परतें बिछाने और गैर-भारित वहन करने वाली सतहों के पुनर्निर्माण आदि के लिए रनवे को दो सप्ताह के लिए बंद कर दिया गया था। इस कार्य में रनवे के हर एक छोर पर कंक्रीट के हिस्से का पुनर्निर्माण और अंतरराष्ट्रीय नागरिक उड्डयन संगठन (आईसीएओ) मानकों के अनुरूप टैक्सी ट्रैक और लिंकस को चौड़ा करना भी शामिल था। सीमा सड़क संगठन (बीआरओ) ने इस कार्य को कार्यान्वयन एजेंसी के रूप में पूरा किया। वहीं, एयरलाइन्स और यात्रियों की असुविधा को कम करने को लेकर नागरिक विमान परिचालन की सुविधा को शुरू करने के लिए इस काम को तेजी से पूरा किया गया।

बागडोगरा, पश्चिम बंगाल का दूसरा सबसे व्यस्त हवाईअड्डा है और भारतीय वायु सेना (आईएएफ) के हवाई क्षेत्र से जुड़े एक नागरिक टर्मिनल के साथ एक संयुक्त उपयोगकर्ता अंतरराष्ट्रीय हवाईअड्डा है। आईएएफ के समय पर काम पूरा होने से अब लगभग 8000 हवाई यात्री हर दिन बागडोगरा से देश के विभिन्न हिस्सों के लिए उड़ान भर सकेंगे। बागडोगरा हवाई क्षेत्र न केवल सामरिक दृष्टि से महत्वपूर्ण है, बल्कि पर्यटन व अर्थव्यवस्था को बढ़ावा देने के लिए एक प्रमुख अंतरराष्ट्रीय केंद्र भी है। दार्जिलिंग और सिलीगुड़ी को देश और विश्व के अन्य हिस्सों से जोड़ने के लिए यह हवाई क्षेत्र एक महत्वपूर्ण बिंदु है। आईएएफ, सरकार के मिशन उड़ान- 'उड़े देश का आम नागरिक' के लिए प्रतिबद्ध है।

<https://pib.gov.in/PressReleasePage.aspx?PRID=1820275>



Press Information Bureau
Government of India

Ministry of Defence

Tue, 26 Apr 2022 5:51 PM

IAF readies Bagdogra airfield for resumption of civil air operations civil aircraft restart operations from 26 april 2022

The Indian Air Force has carried out extensive resurfacing work on the runway of Bagdogra airfield enabling civil aircraft to resume operations from the morning of 26 April 2022. The first civil aircraft landed there today at around 08:00 am. The resurfacing on central bituminous portion of the runway has been completed on schedule. The runway was closed for two weeks for laying three flexible (bituminous) layers, reconstruction of non-load bearing surfaces etc. The work also involved reconstruction of the concrete portion at each end of the runway and widening of the taxi tracks & links as per International Civil Aviation Organisation (ICAO) Standards. The work was executed with Border Roads Organisation (BRO) as the implementing agency and was completed expeditiously to facilitate civil aircraft operations with least inconvenience to the airlines and passengers.

Bagdogra is the second busiest airport of West Bengal and is a joint user international airport with a civil terminal attached to the IAF airfield. IAF's timely completion of the work will enable approximately 8000 air travellers to fly to and from Bagdogra, to various parts of the country, every day. The Bagdogra airfield is not only important from a strategic point of view but is also a major international hub for promoting tourism and economy. The airfield is an important node for connecting Darjeeling and Siliguri to the rest of the country and the world. IAF remains committed to the Government's Mission UDAN - 'Ude Desh Ka Aam Naagrik'.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1820196>

THE TIMES OF INDIA

Tue, 26 Apr 2022

Rajnath holds talks with UK's Defence procurement minister

Defence minister Rajnath Singh on Tuesday held talks with British minister of defence procurement Jeremy Quin, focusing on bilateral cooperation in areas such as aviation and shipbuilding. In the meeting, Singh welcomed the UK's announcement of an Open General Export License for India to facilitate industry-to-industry collaboration. "Had a wonderful meeting with the UK Minister of Defence Procurement, Mr. Jeremy Quin. We discussed the opportunities available in areas pertaining to aviation, ship building and other defence industrial

programmes for both the countries," Singh tweeted. The talks between Singh and Quin took place days after Prime Minister Narendra Modi and his British counterpart Boris Johnson agreed on a new and expanded India-UK defence partnership.

"I welcome the UK's announcement of an Open General Export License to facilitate industry to industry collaboration between both the countries. We are looking forward to co-development and co-production with partner nations in the defence domain," Singh said. During his visit to India last week, Johnson announced that the UK is creating an Open General Export Licence (OGEL) for India to "reduce bureaucracy and slashing delivery times" for defence procurement and that London will help New Delhi in the co-development of military hardware including indigenous production of fighter jets. The new defence partnership between India and the UK was discussed in the meeting between Singh and Quin. Separately, defence secretary Ajay Kumar met secretary, Department of Defence of Australia Greg Moriarty and discussed bilateral defence cooperation.

<https://timesofindia.indiatimes.com/india/rajnath-holds-talks-with-uks-defence-procurement-minister/articleshow/91108567.cms>



Tue, 26 Apr 2022

Is India ready to join the sixth-generation tempest future Combat Air System programme?

To further strengthen defence and security ties with India, the British Prime Minister Boris Johnson in his recently concluded visit had offered partnering on development of combat jet technology. A joint statement issued at the end of bilateral talks between Prime Minister Narendra Modi and British PM, stated "Both sides noted cooperation in key areas of strategic collaboration including modern fighter aircraft and Jet Engine Advanced Core Technology." And, the leaders during talks also agreed to work together and with major partner countries to facilitate highest level access to technology to Indian industry.

Which modern fighter aircraft?

It is the sixth generation Tempest Future Combat Air System program. And the British side has been making efforts to bring onboard this programme which was launched in 2018. While Britain is already partnering with Sweden and Italy for technology development, it has also started working with Japan on propulsion and sensor systems, according to some reports. Companies including the BAE Systems, MBDA, Rolls-Royce, Leonardo, and SAAB of Sweden are already involved in the technology development aspect of this programme.

In 2019, a delegation from the UK with top executives of BAE Systems and senior officials from the Ministry of Defense of that country had come to New Delhi to invite the Indian Air Force (IAF) to participate in co-developing the sixth generation aircraft called Tempest. BAE Systems India head Nik Khanna at that time had said that the team was looking for international partners and in India, the team was keen on identifying software engineers as India has a huge capability

in that area. However, there was no development at that time as India did not join the programme and there was no talk about the Tempest. Now, it seems the UK government is keen to get India on board the jet programme and according to sources; there is a possibility of getting involved in the development of the software of the Tempest.

Will India join this programme?

There is no clarity, as India is more keen to make in India and build a strong eco system in defence and aerospace.

More about Tempest

This was launched in 2018, and is expected to enter service by 2040 and it aims to develop optionally-manned stealth fighters. The initial funding of £2 billion (USD2.6 billion) has already been committed by the UK and other aerospace giants have joined the project – Leonardo, Saab and Netherlands is likely to be part of this. The lead company in this project is the UK based BAE Systems, Rolls-Royce will be involved with the engines and MBDA –the European missile developer will be involved in integrating weapons while Leonardo of Italy will be responsible for developing avionics and sensors.

Features

Based on the information available in the public domain, this fighter jet is expected to be single seated, twin-engine, delta wing stealth fighter jet, there will also be two vertical stabilizers which will be slanted inwards just like the F-22 fighter jet of the US. Other features are expected to include ability to deploy and control drone swarms, mounting hypersonic or directed energy weapons and optionally manned. Adaptive-cycle turbofans of the fighter, according to reports, Rolls-Royce says will be built of lightweight composite materials. This will feature superior thermal management. The digital maintenance controls which enable it to generate large quantities of electricity through magnets in the turbine cores.

Weapons

Because of its larger airframe it will have a greater range and more weapons load compared to fifth generation US F-35 fighters.

<https://www.financialexpress.com/defence/is-india-ready-to-join-the-sixth-generation-tempest-future-combat-air-system-programme/2504182/>



Wed, 27 Apr 2022

India to import hardware to modernize its Army, Navy Air force only in exceptional circumstances

The Ministry of Defence (MoD) had earmarked 64 per cent of its Capital Acquisition Budget for domestic industry in the financial year (FY) 2021-22. India will henceforth import military hardware to meet modernisation requirements of its army, navy and air force as well as its coast guard only in exceptional circumstances, Prime Minister Narendra Modi's government has

decided. As the Russia-Ukraine conflict renewed focus on India's dependence on the former Soviet Union nation for weapons and ammunition, the government has moved to further promote its "Make in India" programme in the defence sector by lessening imports from foreign companies. It amended the Defence Acquisition Procedure (DAP) 2020 to make it mandatory to meet all modernisation requirements of the Indian Army, Navy and Air Force as well as the Indian Coast Guard with indigenously manufactured equipment "irrespective of the nature of procurement". "Import of defence equipment and sourcing from foreign industry of capital acquisitions should only be an exception and undertaken with specific approval of Defence Acquisition Council (DAC) or the Defence Minister," according to a press release issued by the government in New Delhi. Defence Minister Rajnath Singh, himself, heads the DAC.

The Ministry of Defence (MoD) had earmarked 64 per cent of its Capital Acquisition Budget for domestic industry in the financial year (FY) 2021-22. It, however, surpassed the target and utilised 65.50 per cent of Capital Acquisition Budget for procurement of defence equipment indigenously manufactured in India. The DAC also approved other amendments in the DAP 2020, including the one to dispense with the requirement of the Integrity Pact Bank Guarantee (IPBG) for domestic defence companies participating in a government procurement process. According to the amended procedure, the Earnest Money Deposit (EMD) would be taken as a bid security for all acquisition cases with Acceptance of Necessity (AoN) cost more than Rs 100 crore. The EMD will be valid for the selected vendor up to signing of contracts and returned to remaining vendors post declaration of selection. "Post contract, Integrity Pact will be covered through the Performance Cum Warranty Bank Guarantee (PWBG). Further, as per extant Government of India policy, EMD is not required from Micro and Small Enterprises (MSEs)," stated the MoD, after acting on an advice from the Ministry of Finance to reduce the financial burden on the country's defence industry.

The DAC also approved amendments in the DAP 2020 to encourage wider participation and broad base indigenous defence manufacturing sector in the country. The total order quantities in acquisition cases would be split between short-listed vendors, wherever viable. Further, the other technically qualified bidders, who would not be awarded the contract, would be issued a certificate by the defence services, indicating that the product had already been successfully trial evaluated, to facilitate vendors to explore other markets.

<http://www.indiandefensenews.in/2022/04/india-to-import-hardware-to-modernise.html?m=1>



Wed, 27 Apr 2022

Defence ministry to fund start-ups working on Artificial Intelligence, Big Data analytics

The Defence Ministry will fund start-ups that provide solutions to the needs of AI, advanced imaging, sensor systems, big data analytics, autonomous unmanned systems and secured communication systems, among other technologies. Defence Minister Rajnath Singh recently launched the sixth edition of the Defence India Start-up Challenge under the ongoing

Innovations for Defence Excellence (iDEX) program. This program aims to support projects that require funding from Rs 1.5 crore to Rs 10 crore. The newly formed seven defence companies, the Indian Coast Guard and organisations under the Ministry of Home Affairs will also participate. Speaking on occasion, Shri Rajnath Singh said that such challenges show the increasing technological prowess of the country. “The iDEX program has provided our science and technology professionals an opportunity to understand futuristic technologies such as AI, augmented reality, block-chain and space technologies,” the minister added.

The Defence India Start up Challenge was launched under the iDEX initiative by MoD and the Atal Innovation Mission. It aims to support Indian start-ups, MSMEs and innovators that create prototypes, commercial products and solutions in the defence and aerospace sector. Founded in 2018, iDEX engages MSMEs, start-ups, individual innovators, R&D initiatives, and academia. It provides them financial assistance to create tech solutions that can be adopted by the defence and aerospace sectors.

<http://www.indiandefensenews.in/2022/04/defence-ministry-to-fund-start-ups.html?m=1>

THE TIMES OF INDIA

Tue, 26 Apr 2022

HAL & BEL ink pact for search track system for SU 30MKI

Defence PSUs Hindustan Aeronautics Limited (HAL) and (BEL) on Tuesday signed a contract for co-development and co-production of long range dual band (IRST) for the Su-30 MKI fighter aircraft. The contract was signed under the MAKE-II procedure of Defence Acquisition Procedure (DAP) 2020, as part of the ‘Make in India’ initiative

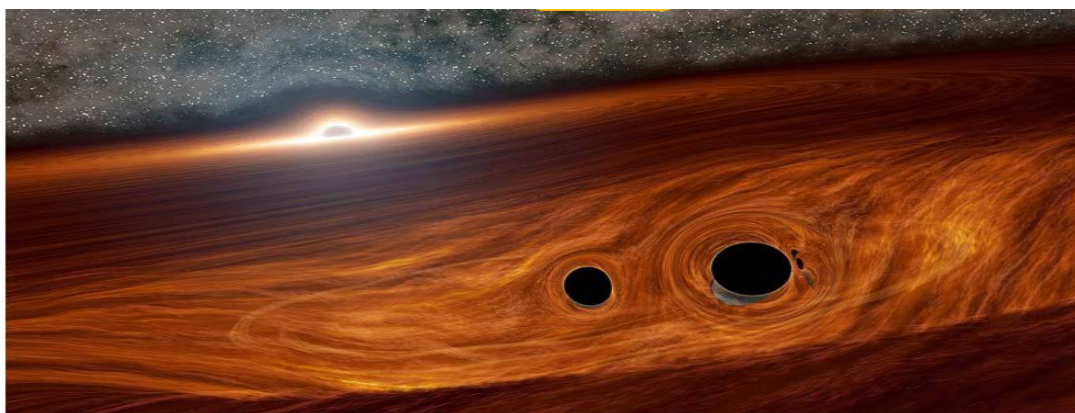
“The proposed IRST system will be a high end strategic technology product in the field of defence avionics and technically competitive to existing IRST systems in the global market with features of television day camera, infrared and laser sensors in single window for air-to-air and air-to-ground target tracking and localisation. The system will enhance the Indian Air Force’s air superiority,” an HAL statement read. Suneel Kumar Srivastava, general manager, HAL () and Loyola Pedro Vianney G, general manager, BEL (Chennai) signed the contract. “The joining hands of two defence PSUs for development of technologically critical IRST gives impetus to in the defence sector. This initiative also opens the future path in the field of indigenous defence manufacturing for development of high end strategic technology products of IRST for various platforms in A global competitive environment,” HAL added.

<https://timesofindia.indiatimes.com/india/hal-bel-ink-pact-for-search-track-system-for-su-30mki/articleshow/91100008.cms>

Tue, 26 Apr 2022

Astronomers observe gravitational waves giving high-speed kick to black hole

Astronomers have observed a cosmic event where two black holes merged into one and the subsequent gravitation waves gave the newly formed black hole a high-speed kick at close to 5 million kilometres per hour, according to ScienceNews. The scientists documented the observation in a research article titled, “Evidence of large recoil velocity from a black hole merger signal,” accepted by the journal Physical Review Letters. Vijay Varma, the lead author of the research article told ScienceNews that the study of these ‘kicks’ could potentially help scientists understand how heavy stellar-mass black holes form.



When gravitational waves shot off in one direction, it caused the black hole to 'kick' (launch) in another direction, similar to how a gun recoils when it is used to shoot a bullet. (Illustrative image) (Image credit: Caltech/R. Hurt (IPAC))

The newly-formed black hole was launched at that high speed by gravitational waves, which are ripples in space-time caused by massive objects moving with high accelerations. In this case, the gravitational waves were emitted when the two black holes merging, spiralling inwards and coalescing. Astronomers have observed a cosmic event where two black holes merged into one and the subsequent gravitation waves gave the newly formed black hole a high-speed kick at close to 5 million kilometres per hour, according to ScienceNews. The scientists documented the observation in a research article titled, “Evidence of large recoil velocity from a black hole merger signal,” accepted by the journal Physical Review Letters.

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ripples in space-time caused by massive objects moving with high accelerations. In this case, the gravitational waves were emitted when the two black holes merging, spiralling inwards and coalescing. As both black holes began orbiting each other due to their extremely strong gravitational forces, it caused the plane in which they orbited to rotate. This can be compared to the wobbling of a top as it spins. The researchers compared the observed data from the event with simulated data from predicted versions of black hole mergers to estimate the kick velocity of the black hole. The researchers found that it was launched at such a high speed that it was probably ejected from its 'globular cluster'. Globular clusters are dense groups of stars and black holes where black holes are expected to come together and merge. The research group estimates that there is only a 0.5 per cent chance that this particular black hole stayed in its globular cluster after it got launched due to the velocity.

<https://indianexpress.com/article/technology/science/two-black-holes-merged-into-one-that-launched-away-at-5-million-kilometres-per-hour-7888578/>



Wed, 27 Apr 2022

Amid delay, ISRO drops first pictures of Chandrayaan-3 mission

Hit by successive delays due to the Covid-19 pandemic-induced lockdown, the first pictures of the Chandrayaan-3 mission to the Moon have finally arrived. The images were released in a documentary by the Indian Space & Research Organisation (ISRO) titled "Space on Wheels" which showcases 75 satellites launched by India. The video shows what appears to be the Chandrayaan-3 lander that will touch the lunar surface. The mission is a successor of the Chandrayaan-2 mission that unfortunately crashed on the dark side of the Moon in 2019. ISRO has said that it will be trying to launch the awaited mission by August this year, however, it seems difficult since several hardware testing remains to be done. The Department of Space in a written response in February this year had said that work is underway on Chandrayaan-3 and it will be launched in August this year.

ISRO has been working to launch Chandrayaan-3 by August this year. The mission has been delayed due to Covid-19 as Minister of Science & Technology Dr. Jitendra Singh said that several ongoing missions were impacted and that "Reprioritisation of projects has taken place in the backdrop of space sector reforms and newly introduced demand-driven models." Apart from Chandrayaan-3, the 17-minute-long documentary contains details about the country's upcoming Aditya L1 mission and the Gaganyaan mission that will launch Indian astronauts into space. The Aditya-L1 mission that will be placed in the first Lagrange point of the Earth-Sun system will study a number of properties of the Sun, such as the dynamics and origins of coronal mass ejections. India has already been working with the European Space Agency to create a network to track the lunar and solar missions.

<http://www.indiandefensenews.in/2022/04/amid-delay-isro-drops-first-pictures-of.html?m=1>

A model to improve robots' ability to hand over objects to humans

For decades, researchers worldwide have been trying to develop robots that can efficiently assist humans and work alongside them as they tackle a variety of everyday tasks. To do this effectively, however, the robots should be able to interact naturally with humans, including handing them and receiving objects from them. Researchers at NVIDIA have recently developed a model that could be used to enhance the ability of robots to naturally pass and receive objects from human agents. This approach, introduced in a paper set to be presented at ICRA 2022, is based on a framework called STORM, which they presented in one of their previous works. "In this work, we focus specifically on making sure that robots can take any object from a human user," Dieter Fox, one of the researchers who carried out the study, told TechXplore. "We came up with a solution that integrates a learned approach for grasping with our predictive control approach, in order to ensure these handovers are predictable, natural, and fast, so that people see the robot as a safe, helpful assistant."



The researchers propose a human-robot handover system that uses ...

Fox and his colleagues at NVIDIA have been working on improving the manipulation and interaction skills of robots for several years now. The structure of the model presented in their new paper, however, differs from the approaches presented in their previous works. More specifically, their newly presented approach initially uses a learned model to predict several ways in which the robot could take an object from a human agent's hand. Then, instead of using a simple rule-based algorithm to determine which of these ways is more effective, it identifies the optimal approach using STORM, the model predictive control (MPC) framework previously created by the team. "Our MPC approach, dubbed STORM, works by sampling many different possible motions the robot could make from the current location to where the object is," Fox explained. "It leverages GPU computations to evaluate these trajectories, allowing us to quickly check 500 of them in parallel."

The model created by Fox and his colleagues updates the robot's control decisions several times per second. This ultimately allows it to quickly adapt the robot's planned trajectory and its decisions about where to grasp objects based on the movements performed by the user it is collaborating with. "This work shows how we can combine learned object grasping and human tracking techniques with efficient motion planning to generate robust, reliable, and natural robot behavior," Fox said. "It provides a foundation to build all kinds of human-robot collaborative behavior."



The researchers propose a human-robot handover system that uses ...

Fox and his colleagues evaluated their model's performance in a series of experiments where robots handed over and received a variety of objects while interacting with four human users. In these tests, their approach achieved very promising results, as almost all the participants felt that the robot was better at collaborating with them when powered by the researchers MPC framework than when it was based on a baseline approach. In the future, the new model introduced by this team at NVIDIA could be used to improve the performance of both existing and newly developed robots on tasks that involve the manipulation of objects in close collaboration with human agents. Meanwhile, the team plans to develop other tools to enhance human-robot collaboration. "More broadly, approaches like this that combine the power of deep learning with planning-based reasoning will be useful for many applications," Fox added. "In our next studies, we would like to explore more general human-robot collaborative systems to enable the robot to work with humans efficiently, while also exploring the possibility of training these robot systems virtually in simulated environments and deploying the trained models on real-world robots."

<https://techxplore.com/news/2022-04-robots-ability-humans.html>

