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# समाचार पत्रों से चयित अंश Newspapers Clippings

A Daily service to keep DRDO Fraternity abreast with DRDO Technologies, Defence Technologies, Defence Policies, International Relations and Science & Technology

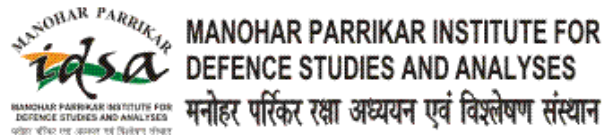
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Thu, 01 April 2021

## Promoting Defence Exports

By S. Samuel C. Rajiv

India's defence exports during 2015-20 grew at a cumulative annual growth rate (CAGR) of 35 per cent — from around Rs 2,000 crore to Rs 9,000 crore. The Ministry of Defence (MoD) has set an ambitious defence exports target of Rs 35,000 crore by 2025. The country's defence exports push is part of its effort to become part of the global defence value chain and one of the leading countries in the defence sector. India was ranked at the 23rd position as a global arms exporter by SIPRI in 2020.

The MoD has undertaken key institutional changes in recent years to facilitate exports. The creation of the Export Promotion Cell (EPC) in the Department of Defence Production (DDP) is one significant



institutional step. Measures like the 2019 Defence Attache's (DAs) scheme is another, as part of which financial support to undertaking outreach activities and market studies are provided to DAs. The DA scheme, in its initial avatar, divided 85 countries into three categories — A (23), B (17), and C (45), with the Category A countries being seen as having the highest potential for exports.

Private Indian firms can also make use of certificates issued by government testing and quality control agencies, as part of the 2018 Scheme for Promotion of Defence Exports, to improve the marketability of their products overseas. In 2019-20, ten such certificates, certifying that their products were 'Fit for Indian Military use', were awarded to four private firms (Bharat Forge; JCB; L&T Defence, Tata Motors).

The private sector has come to occupy an important role in India's defence exports saga. In 2019-20, over 85 per cent of export authorisations were to private sector companies, valued at over Rs 8,000 crore. As of 2020, nearly 500 industrial licenses (ILs) have been issued to about 300 private sector companies. These licenses are valid to 15 years, and can be further extended for a period of three years.

Some of the significant export items by the defence public sector units (DPSU's) include the export of an offshore patrol vessel (OPV) to Mauritius in 2014 by the Garden Reach Shipbuilders and Engineers Ltd (GRSE Ltd). This was the first export of a ship by an Indian shipyard. The Hindustan Aeronautics Limited (HAL) has exported helicopters to Nepal, Afghanistan, Mauritius, Seychelles, Namibia, Ecuador and Suriname, apart from structural work packages and avionics to major foreign original equipment manufacturers (OEMs) in Europe and the US.

The ordnance factories have supplied ammunition to the United Arab Emirates (UAE) while major exports by the Bharat Electronics Limited (BEL) have included Coastal Surveillance System for Maldives and Seychelles as well as Weapon Locating Radar for Armenia. BEL has also opened

up marketing offices overseas, in six countries, and has proposed strategic alliances with global players like the Israel Aircraft Industries (IAI), for joint marketing of niche BEL products.

The Defence Research and Development Organisation (DRDO)-developed products like the Akash surface-to-air missile (SAM) are expected to achieve export success, with the government in December 2020 authorising the sale of such sophisticated systems. The government also created a special committee, comprised of the Raksha Mantri, the External Affairs Minister (EAM) and the National Security Advisor (NSA), to fast track approvals for such systems, going forward.

The need to leverage credit financing suitably to enhance defence exports is recognised by the government. As of December 2020, \$930.48 million out of \$4.3 billion of EXIM Bank Pipeline LoCs relate to procurement by other countries of indigenous defence equipment. These include landing ship tanks and training ships by Nigeria, interceptor boats by Comoros, and defence projects by Vietnam amounting to nearly \$500 million, among others. Countries like Bangladesh, Sri Lanka, Mauritius, and Suriname have also used LoCs to source domestically manufactured defence equipment in the recent past.

### **The Challenges**

In February 2015, in response to a question, the Minister of State (MoS) in the MoD told the Lok Sabha that there were no fixed targets for export of military stores to other countries. The export target of Rs 35,000 crore highlighted subsequently in MoD documents like the Draft Defence Production Policy, 2018 and the Draft Defence Production and Export Promotion Policy, 2020, is indeed noteworthy. However, during 2020-25, exports need to grow at a CAGR of over 40 per cent to reach Rs 35,000 cr. While the target for 2020-21 was Rs 15,000 crore, till Dec 2020, India's defence exports stood at around Rs 5,700 crore.

The Draft DPP 2018 and Draft DPEPP 2020 had, inter alia, flagged the need for enhancing the export focus of DPSUs and the ordnance factories, the importance of marketing and outreach activities, robustness of quality assurance infrastructure, among other suggestions. The DPSUs and ordnance factories are challenged to achieve export targets equivalent to 25 per cent of their sales, by 2025. In 2019-20, exports by the DPSUs and the ordnance factories were less than 2 per cent of their revenues.

The economic challenges due to the Covid pandemic faced by potential customers of Indian defence equipment are also expected to pose a challenge. The Philippines, for instance, in November 2020, cited issues with funding to conclude a deal for Brahmos. In March 2021, however, in a significant development, both countries signed an Implementing Agreement, paving the way for the procurement of defence equipment from India. This does indicate that the Southeast Asian country's challenging security environment has trumped economic considerations in dictating its defence choices.

More than Rs 120,000 crore of DRDO technology-based systems have been inducted in to the Indian armed forces in the last few years and over 400 Transfer-of-Technology (ToT) agreements have been concluded with the Indian defence industry. Still, more than 140 DRDO technologies are available for licensing by the Indian defence industry, across niche areas like mini-unmanned ground vehicles, active electronically scanned array (AESA) radars, chemical, biological, radiological, and nuclear suits, among others. It is up to the increasingly robust Indian defence industry to take advantages of such readily available technologies.

### **Conclusion**

The MoD has established a robust relationship with industry associations to conduct numerous seminars and webinars to explore opportunities for the export of defence equipment. In the past year, it is noteworthy that such webinars have been held with more than 20 countries. Trade shows, like Defexpo 2020 and Aero India 2021 have gained in international prominence. Aero India 2021 was aptly titled, 'The Runway to a Billion Opportunities'. More than 500 exhibitors participated in the trade show, despite limitations imposed by the pandemic, and the show witnessed over 200 MoUs and product launches.

India's defence indigenisation push is expected to add value to the domestic defence industry, and help boost their exports profile. Not just incremental but significant changes in institutional structures and policy framework have been initiated to facilitate defence exports, signifying an unmistakable intent and resolve on the part of the government. The defence eco-system, made up of DPSUs, ordnance factories, private industry, DRDO, Start-Ups, and the academia, is indeed becoming more dynamic as it strives to achieve the tough defence exports targets.

*(S. Samuel C. Rajiv is Associate Fellow at the Manohar Parrikar Institute for Defence Studies and Analyses, New Delhi. Views expressed are of the author and do not necessarily reflect the views of the Manohar Parrikar IDSA or of the Government of India.)*

<https://www.idsa.in/idsacomments/promoting-defence-exports-sscrajiv-310321>

# News Tree

Thu, 01 April 2021

## **This is the new India: till yesterday, the countries selling arms to India are now buying.**

*By Chandan Sen*

Till yesterday, the countries which used to sell arms to India, today are buying the same countries. The Ministry of Defense procures arms from many countries. The good news is that many of these countries are now starting to buy small arms from India as well. According to a Defense Ministry report, the arms factories are selling arms to countries like Israel, Sweden, United Arab Emirates (UAE), Brazil, Bangladesh, Bulgaria etc. The UAE has made the most purchases. Apart from this, efforts are also being made to sell arms to some countries of Europe including France and America.

However, the weapons that are being sold to these countries are not of the same high caliber that we buy from them. Nevertheless, the sale of arms to these countries is proving to be a profitable deal for the Ordnance Factories. These countries have the highest number of 155 mm. Cannons have been sold which have been developed by DRDO and are being manufactured by Ordnance Factories. Let us know that India has been the buyer of weapons of many countries including Israel, Sweden, UAE.



Actually, the Ordnance Factories did not earlier export arms, but were limited to supplies to the military and security forces. But from 2015-16, they were allowed to export. Then they had exported six crores weapons. Exports reached 140 crores in 2019-20 and are projected to reach 225 crores in 2020-21.

According to the ministry, currently the target for Ordnance Factories has been set to achieve one-fourth of its total revenue from exports. The Ordnance Factory Board has been given a target of earning a revenue of 30 thousand crores by 2025 and by this period it is working on a plan to increase its exports to 7500 crores. For this, the Ordnance Factories are being made state-of-the-art and automation in construction is being increased. This will increase the demand for weapons manufactured by them in the international market.

<https://news.newstree.co.in/news/this-is-the-new-india-till-yesterday-the-countries-selling-arms-to-india-are-now-buying-145774/>

## Bhatt urges Rajnath not to shift defence institute out of Uttarakhand

Dehradun: A BJP MP on Wednesday urged Defence Minister Rajnath Singh not to shift the Defence Institute of Bio-Energy Research out of Gora Padhav near Haldwani. BJP MP from Nainital, Ajay Bhatt made the request in a memorandum which he handed over to Singh in a meeting with him on Wednesday. In his memorandum, Bhatt said it is important to have an institute like DIBER in Uttarakhand that shares borders with China and Nepal.

Bhatt urged Singh not to shift the institute to any other state given the strategic significance of Uttarakhand whose five districts out of 13 are located in border areas.

DIBER runs independent research institutes and field stations set up by DRDO in Almora, Auli, Harshil and Panda Farm in 1962, Bhatt said.

(Disclaimer: This story has not been edited by Outlook staff and is auto-generated from news agency feeds. Source: PTI)

<https://www.outlookindia.com/newscroll/bhatt-urges-rajnath-not-to-shift-defence-institute-out-of-uttarakhand/2056714>

## अमर उजाला

### डिबेर को हल्द्वानी से न करें स्थानांतरित

हल्द्वानी: गोरापड़ाव स्थित रक्षा जैव ऊर्जा अनुसंधान (डिबेर) राज्य से दूसरे जगह स्थानांतरित करने की सुगबुगाहट पर सांसद अजय भट्ट ने केंद्रीय रक्षा मंत्री राजनाथ सिंह से मुलाकात की। उन्होंने डिबेर का अन्यत्र स्थापित न करने की मांग की है।

सांसद ने कहा कि उत्तराखंड सामरिक रूप से नेपाल और चीन की सीमा से घिरा प्रदेश है। राज्य के 13 में से तीन जिले सीमांत क्षेत्रों से सटे हैं। इन इलाकों में सैनिक और सीमांत गांवों के नागरिक भी ग्राम प्रहरी के तहत अपना सहयोग दे रहे हैं। 1962 में उत्तराखंड में सैन्य संबंधित शोध कार्य के लिए डीआरडीओ ने उत्तराखंड में स्वतंत्र शोध इकाइयों की स्थापना की थी। सेनाओं को खाद्य आपूर्ति और अन्य आवश्यकताओं की पूर्ति का कार्य सौंपा गया था। इसकी पहली इकाई के रूप में अल्मोड़ा रिसर्च यूनिट स्थापित की गई। तीन फील्ड स्टेशन औली (चमोली), हर्षिल (उत्तरकाशी) और पंडा फार्म (पिथौरागढ़) में स्थापित किया गया।



डीआरडीओ की प्रयोगशाला रक्षा जैव ऊर्जा अनुसंधान संस्थान गोरापड़ाव हल्द्वानी जिला नैनीताल में स्थित है। जो इन तीनों इकाइयों औली, हर्षिल और पंडा फार्म को कुशलता से संचालित कर रही है।

सांसद अजय भट्ट के अनुसार यह सैन्य संबंधित आवश्यकताओं को पूरा करने के साथ-साथ आत्मनिर्भर भारत में भी अपना योगदान दे रही है। लिहाजा हल्द्वानी के इस प्रतिष्ठित संस्थान को किसी अन्य प्रयोगशाला या दूसरे प्रदेश में स्थानांतरित न किया जाय।

<https://www.amarujala.com/uttarakhand/nainital/do-not-move-diber-from-haldwani-haldwani-news-hld4200868172>



Thu, 01 April 2021

## हल्द्वानी- रक्षा मंत्री राजनाथ सिंह से इस संस्थान के लिए लगाई गुहार, सांसद अजय भट्ट ने बताई खूबियां

उत्तराखंड के नैनीताल उधम सिंह नगर संसदीय क्षेत्र से सांसद अजय भट्ट ने केंद्रीय रक्षा मंत्री राजनाथ सिंह से मुलाकात करते हुए नैनीताल जिले के हल्द्वानी के पास गोरा पढ़ाव स्थित रक्षा जैव ऊर्जा अनुसंधान DIBER को दूसरे प्रदेश में स्थानांतरण न किए जाने को लेकर निवेदन किया।

इसके लिए सांसद अजय भट्ट ने केंद्रीय रक्षा मंत्री राजनाथ सिंह को जापन देते हुए बताया कि उत्तराखंड के सामरिक रूप से संवेदनशील सीमाएं नेपाल और चीन के साथ हैं। राज्य के 13 में से 5 जिले सीमांत क्षेत्रों में हैं और इन इलाकों में सैनिकों द्वारा सीमा पर सुरक्षा के अलावा सीमांत गांव के नागरिक भी ग्राम प्रहरी के तहत अपना सहयोग दे रहे हैं।



जिसके लिए 1962 में उत्तराखंड में सैन्य संबंधित शोध कार्य के लिए डीआरडीओ ने उत्तराखंड में स्वतंत्र शोध इकाइयों की स्थापना की। सेनाओं को खाद्य पूर्ति व अन्य आवश्यकताओं की पूर्ति का कार्य सौंपा गया। जिसकी पहली इकाई अल्मोड़ा रिसर्च यूनिट स्थापित हुई और 3 फील्ड स्टेशन औली (चमोली), हर्षिल जिला उत्तरकाशी तथा पंडा फार्म पिथौरागढ़ में स्थापित किए गए।

इसके अलावा डीआरडीओ की प्रयोगशाला रक्षा जैव ऊर्जा अनुसंधान संस्थान हल्द्वानी नैनीताल में स्थित है जो इन तीनों इकाइयों औली, हर्षिल और पंडा फार्म को कुशलता एवं पूर्ण निष्ठा से संचालित कर रही है। यही नहीं सांसद अजय भट्ट ने बताया कि यह सैनी संबंधित आवश्यकताओं को पूरी करने के साथ-साथ आत्मनिर्भर भारत में भी अपना योगदान दे रही है। लिहाजा रक्षा जैव ऊर्जा अनुसंधान संस्थान हल्द्वानी नैनीताल की सामरिक दृष्टि से महत्वता के दृष्टिगत इस प्रतिष्ठित संस्थान को किसी अन्य प्रयोगशाला अथवा दूसरे प्रदेश में स्थानांतरित न किया जाए।

<https://khabarpahad.com/haldwani-raksha-mantri-shri-rajnath-singh-calls-for-this-institutes-guhar-rep-ajay-bhatt/>



**Press Information Bureau  
Government of India**

**Ministry of Defence**

*Wed, 31 March 2021 6:00PM*

### **Indian Army formally closes down military farms**

Military Farms were set up with sole requirement of supplying hygienic cow's milk to troops billeted in various garrisons across British India. First Military farm was raised on 01 Feb 1889 at Allahabad. After independence Military Farms flourished with 30,000 heads of cattle in 130 Military Farms all over India in varied Agro-climatic conditions. Military Farms were even established in Leh and Kargil in late 1990s, with the role of supply of fresh and hygienic milk to troops at their locations on daily basis. Another major task was management of large tracts of defence land, production and supply of Baled Hay to animal holding units.

For more than a century Military Farms with their dedication and commitment supplied 3.5 crore ltr of milk and 25000 MT of hay yearly. It is credited with pioneering the technique of Artificial Insemination of cattle and introduction of organised Dairying in India, providing yeoman service during 1971 war, supplying milk at the Western and Eastern war fronts as well as during Kargil operations to the Northern Command. In collaboration with the Ministry of Agriculture, they established "Project Freiswal", credited to be the world's largest cattle cross-breeding program. They also teamed up with DRDO in development of Bio-Fuel.



After 132 years of glorious service to the nation, curtains were drawn on this organisation. All the officers and workers have been redeployed within the ministry to continue providing service to the organisation.

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=1708740>





## पत्र सूचना कार्यालय भारत सरकार

### रक्षा मंत्रालय

Wed, 31 March 2021 6:00PM

## भारतीय सेना ने औपचारिक रूप से सैन्य फार्मों को बंद किया

ब्रिटिश काल के भारत में विभिन्न सैन्य छावनियों में सैनिकों को गाय का हाइजीनिक दूध उपलब्ध कराने के लिए सैन्य फार्म स्थापित किए गए थे। पहला सैन्य फार्म 01 फरवरी 1889 को इलाहाबाद में तैयार किया गया था। स्वतंत्रता के बाद विभिन्न कृषि-जलवायु परिस्थितियों के अनुसार पूरे भारत में 30,000 मवेशियों के साथ 130 सैन्य फार्म बनाये गए थे। 1990 के दशक के अंत में लेह और कारगिल में भी दैनिक आधार पर सैनिकों को ताजा और स्वच्छ दूध की आपूर्ति के उद्देश्य के साथ सैन्य फार्मों की स्थापना की गई थी। इसका एक अन्य प्रमुख कार्य सैन्य भूमि के बड़े इलाके की देखभाल करना तथा पशुओं का प्रबंधन करने वाली इकाइयों के लिए बड़ी मात्रा में उत्पादन और आपूर्ति करना था।

एक सदी से अधिक समय तक सैन्य समर्पण और प्रतिबद्धता के साथ 3.5 करोड़ लीटर दूध और 25000 मीट्रिक टन घास की प्रति वर्ष आपूर्ति की गई। इसे ही मवेशियों के कृत्रिम गर्भाधान की तकनीक का नेतृत्व करने और भारत में संगठित डेयरिंग शुरू करने का श्रेय दिया जाता है। वर्ष 1971 के युद्ध के दौरान पश्चिमी तथा पूर्वी युद्ध मोर्चों पर कृषक सेवा प्रदान करते हुए दूध की आपूर्ति के साथ-साथ कारगिल युद्ध के समय उत्तरी कमान में इसका संचालन कार्य उल्लेखनीय रहा है। कृषि मंत्रालय के सहयोग से "प्रोजेक्ट फ्रीस्वाल" की शुरुआत की गई, जिसे दुनिया के सबसे बड़े मवेशी क्रॉस-ब्रीडिंग कार्यक्रम का श्रेय दिया जाता है। सैन्य फार्मों ने जैव-ईंधन के विकास में डीआरडीओ के साथ मिलकर काम किया है।



राष्ट्र के लिए शानदार कार्य के 132 वर्षों के बाद इसकी सेवाओं को विराम दिया गया। संगठन को सेवा प्रदान करने के लिए सभी अधिकारियों और श्रमिकों को फिर से मंत्रालय के भीतर नियुक्त किया गया है।

<https://pib.gov.in/PressReleasePage.aspx?PRID=1708778>

## 3 more Rafales land in India; IAF thanks UAE for mid-air refueling

*The IAF also thanked the UAE air force for refuelling the Rafale jets, describing it as yet another milestone in the strong relationship between the two air forces*

A fourth batch of three Rafale fighter jets landed in India on Wednesday evening after flying non-stop from France, in a further boost to the strike capability of the Indian Air Force.

The jets were provided mid-air refuelling by air force tankers of the United Arab Emirates (UAE), the IAF said.

"The 4th batch of three IAF #Rafales landed on Indian soil after a direct ferry from #IstresAirBase France," it tweeted.

The IAF also thanked the UAE air force for refuelling the Rafale jets, describing it as yet another milestone in the strong relationship between the two air forces.

The IAF did not disclose the base where the Rafale jets landed.

"Another batch of #Rafale take to the skies on non stop flight to India with mid air refueling by UAE. Indian Air power grows further," the Indian Embassy in France tweeted earlier.

With the arrival of the three jets, the size of the Rafale fleet has increased to 14.

The first batch of five Rafale jets arrived in India on July 29, nearly four years after India signed an inter-governmental agreement with France to procure 36 of the aircraft at a cost of ₹59,000 crore.

The formal induction ceremony of the fleet had taken place at Ambala on September 10 last.

A second batch of three Rafale jets arrived in India on November 3, while a third batch of another three jets joined the IAF on January 27.

The first Rafale squadron is based in Ambala air force station.

The Indian Air Force is set to raise the second squadron of the Rafale combat jets in mid-April and it will be based in Hasimara air base in West Bengal, according to military officials.

India is expected to get more Rafale jets from France in the next few months.

The Rafale jets, manufactured by French aerospace major Dassault Aviation, are India's first major acquisition of fighter planes in 23 years after the Sukhoi jets were imported from Russia.

The Rafale jets are capable of carrying a range of potent weapons. European missile maker MBDA's Meteor beyond visual range air-to-air missile, Scalp cruise missile and MICA weapons system will be the mainstay of the weapons package of the Rafale jets.

<https://www.hindustantimes.com/india-news/3-more-rafales-land-in-india-iaf-thanks-uae-for-mid-air-refueling-101617214561574.html>



The IAF did not disclose the base where the Rafale jets landed.(Twitter/@IAF\_MCC)

## बढ़ी वायुसेना की ताकत: राफेल लड़ाकू विमान की चौथी 'पलटन' भारत पहुंची, फ्रांस से बिना रुके भरी उड़ान

सार

- चीन और पाकिस्तान के साथ सीमा पर जारी तनाव के बीच तीन और राफेल विमान पहुंचे भारत
- भारत सरकार सेनाओं को मजबूत करने में जुटी
- अप्रैल के मध्य में नौ और राफेल लड़ाकू विमान पहुंचेंगे भारत

विस्तार

नई दिल्ली: भारत सरकार चीन और पाकिस्तान जैसे पड़ोसी देशों के साथ जारी तनाव के बीच देश की सेनाओं को और ताकतवर बनाने में जुटी है। भारतीय वायुसेना की ताकत में और अधिक इजाफा हो गया है। राफेल लड़ाकू विमानों की चौथी खेप के तहत तीन राफेल विमान बुधवार को फ्रांस के इसट्रेस एयर बेस से बिना रुके भारत के अंबाला एयरबेस पर उतर गए हैं।

भारतीय वायुसेना ने राफेल की लैंडिंग की वीडियो जारी करते हुए कहा कि यूईई वायु सेना के टैंकरों द्वारा राफेल विमानों में रास्ते में इन-फ्लाइट ईंधन (एयर टू एयर रिफ्यूलिंग) भरवाया गया। यह दो वायु सेनाओं के बीच मजबूत संबंधों में एक और मील का पत्थर साबित हुआ है।

बता दें कि नौ विमानों का अगला जत्था अप्रैल में भारत आएगा। इनमें से पांच विमानों को उत्तरी बंगाल में हाशिमारा एयरबेस पर तैनात किया जाएगा।

### 36 राफेल खरीदने के लिए हुआ था सौदा

भारत ने फ्रांस सरकार के साथ सितंबर, 2016 में 36 राफेल लड़ाकू विमान खरीदने के लिए 59,000 करोड़ रुपये का रक्षा सौदा किया था। फ्रांस की कंपनी दसॉ एविएशन से पांच राफेल विमानों का पहला बेड़ा 28 जुलाई को भारत पहुंचा था। इस बेड़े ने फ्रांस से उड़ान भरने के बाद संयुक्त अरब अमीरात में हालट किया था, जहां उसमें ईंधन भरा गया था। राफेल के पहले बेड़े को जब वायुसेना में शामिल किया गया था, तब रक्षा मंत्री राजनाथ सिंह ने इसे गेम चेंजर करार दिया था। उनका दावा था कि राफेल के साथ वायुसेना ने तकनीकी स्तर पर बढ़त हासिल कर ली है। राफेल नवीनतम हथियारों और सुपीरियर सेंसर से लैस लड़ाकू विमान हैं।

### इतने राफेल छुड़ा रहे चीन के छक्के

भारतीय वायुसेना के अंबाला स्थित गोल्डन एरो स्क्वाड्रन ने जुलाई, 2020 और जनवरी, 2021 के बीच 11 राफेल लड़ाकू विमानों को पहले ही वायुसेना में शामिल कर लिया गया है। इन्हें लद्दाख सीमा पर तैनात किया गया है। बता दें कि मई 2020 की शुरुआत से ही चीन के साथ सीमा गतिरोध के बाद सेना हार्ड अलर्ट पर है।

इसके साथ ही केंद्र सरकार फ्रांस की साफरान मिलिट्री एयरक्राफ्ट इंजनों के संयुक्त विकास में भी रुचि दिखा रही है। उल्लेखनीय है कि राफेल लड़ाकू विमानों में 74 किलो न्यूटन के थ्रस्ट वाले दो एम88-3



साफ्रान इंजन दिए गए हैं। लेकिन, राष्ट्रीय सुरक्षा योजनाकर्ता चाहते हैं कि डीआरडीओ के अत्याधुनिक मल्टीरोल कॉम्बैट एयरक्राफ्ट के लिए अधिक थ्रस्ट वाले (90 से 100 किलो न्यूटन) इंजन चाहते हैं।

### महामारी के बावजूद तय समय पर मिलेंगे राफेल

भारत में फ्रांसीसी दूत इमैनुअल लेनिन ने कहा है कि कोरोना के बावजूद 2022 तक तय समय में सारे लड़ाकू विमान भारत को सौंप दिए जाएंगे। उन्होंने कहा कि यह हमारे लिए गर्व की बात है कि कोरोना के बावजूद हम भारत को तय समय और उससे पहले राफेल सौंपने के लिए सक्षम हैं।

<https://www.amarujala.com/india-news/iaf-rafales-4th-batch-of-three-plane-landed-on-indian-soil-after-a-direct-ferry-from-istres-air-base-france-says-indian-air-force>

# ThePrint

Thu, 01 April 2021

## Navy set to lease only new utility helicopters for its warships, eyes two-year deal

*The leasing cost cited by over a dozen firms varied from as low as Rs 40 lakh per month to Rs 3.4 crore for each chopper*

*By Sneesh Alex Philip, Edited by Sanghamitra Mazumdar*

New Delhi: Having received responses from over a dozen companies, the Indian Navy has decided to take only new utility helicopters on lease for its warships, and from original equipment manufacturers (OEMs), to shore up its critical capability gaps in this area, ThePrint has learnt.

The Navy has been desperate to replace its Chetak fleet of 1960s vintage with new naval utility helicopters (NUH), but its plans to acquire 111 such choppers under the strategic partnership has run into rough waters because of a number of reasons.

To circumvent this, the Navy had decided to go in for leasing of a certain number of helicopters, for a two-year period, to meet the immediate critical requirement for choppers that are utilised for multiple roles, including search and rescue, casualty evacuation and low-intensity maritime operations, besides torpedo drops.

Accordingly, the Navy had in October last year sent out feelers to over a dozen companies, including Indian firms, seeking to know what they can offer, sources in the defence and security establishment said.

The companies included foreign OEMs and Indian operators such as Pawan Hans, Air Safa and Aryan Aviation, besides top corporate houses who have their own helicopter wings. The Navy also sought information from various embassies such as that of the United Kingdom.

Incidentally, the Navy sought details for leasing of 24 choppers from the Indian operators while seeking information on 12-16 from the foreign OEMs.

The firms responded and the leasing cost cited varied from as low as Rs 40 lakh per month for each chopper to Rs 3.4 crore, the sources said.

### RFI to be issued soon

Critics of this process said the Navy had sought information from all including those who had just two helicopters and hence got itself into a convoluted process without taking into account



Representational image of Indian Navy ships | Photo: Commons

whether the companies had the financial and technical capability to offer specialised helicopters to the force and also maintain them.

However, the Navy sources said unlike the leasing for drones that was done easily since there was only one company in question, the force needed to reach out to all to know what exactly is available in the market.

Talking about the huge variance in the bid amounts and fear that those who gave a costing of mere Rs 40 lakh might win if the concept of lowest bidder is taken into consideration, the sources said multiple criteria is kept in mind and the steps taken until now were just a process to understand what the market can offer.

Having gone through the responses, they added, the force will now come out with a detailed request for information (RFI) that will be sent out to OEMs since it has been decided that the Navy will lease only “new helicopters”, and since the process will also involve substantial investment in maintenance and repair facilities.

“New helicopters” mean the Navy will go in for leasing from OEMs and not any of the Indian operators whose helicopters are already flying in civilian space.

The sources did accept that unlike at the time of leasing of drones, the whole process of which was completed in two months, the helicopter matter is taking time since there are multiple players.

While European firm Airbus, which is offering its AS565 MBe naval version of the Panther family of helicopters, is considered to be the front-runner for both leasing and the overall plan for 111 NUHs, Navy sources said it is too early to speculate on who will bag the contract.

<https://theprint.in/defence/navy-set-to-lease-only-new-utility-helicopters-for-its-warships-eyes-two-year-deal/631496/>



Thu, 01 April 2021

## **China’s plans on Tibet and border infra will pose a threat to India**

***India will have to contend with a much-improved strategic border defence infrastructure and considerably enhanced Chinese military presence that will pose a long-term potential threat. China’s 14th Five Year Plan and the Long Range Objectives—2035 clearly point to a fraught and possibly dangerous period in India-China relations that lies ahead***

***By Jayadeva Ranade***

Tibet is under the spotlight after the Lianghui, or “Big Two”, as the plenary sessions (March 4-11, 2021) of the National People’s Congress (NPC) and Chinese People’s Political Consultative Conference (CPPCC) are referred to. Among the documents approved at this session are the 142-page, 70,000-character 14th Five Year Plan (2021-2025) and the Long Range Objectives through the Year 2035 for National Economic and Social Development of the People’s Republic of China.

The document, whose English version is yet to be released, sets out China’s national strategic intent and identifies core areas of national security and development with a definite focus on strategic science and technology programmes in the frontier areas. It approves projects of specific significance to India, shifting them from the realm of speculation, or potential concern, to imminent threats. These will put India under additional military pressure. The recent plenum decisions also reveal that China is turning Tibet into a military redoubt which, within some years, will become a centre of long-term pressure on India.

Setting at rest speculation regarding China’s plans for the Brahmaputra (Yarlung Tsangpo), the document confirms that a number of hydroelectric projects will be built along the river’s lower reaches and that a massive dam — three times the size of the Three Gorges Dam in Sichuan

province — will be constructed on the Great Bend on the Brahmaputra. The dams to be constructed on the young and fragile Himalayas will pose an ever-present danger to those living downstream, and adversely impact the livelihoods of millions of people who reside in the Indo-Gangetic plain. The related construction activity, as well as a huge influx of labourers, technicians and engineers, will raise temperatures on the Tibetan Plateau and accelerate the retreat of Tibet's glaciers, which are the source of the Indus and a number of rivers that feed into the Ganga. One consequence will be the reduced flow of water. The Mekong River will be similarly impacted.

Notwithstanding the ongoing talks for reducing tension along the Line of Actual Control (LAC) and rebuilding of ties, the 14th Five Year Plan (2021-2025) and the Long Range Objectives-2035 mentions a number of strategic military projects that are planned for completion. Many of these will reinforce China's existing border defence infrastructure in Tibet and directly augment the capabilities of the People's Liberation Army (PLA).

The G219 and G331 national highways are to be upgraded and extended to run parallel to the G318 Sichuan-Tibet Highway, which will also be upgraded and runs along China's borders with India. The transportation network and Tibet's links to the mainland will be expanded with the completion of the new Chengdu-Lhasa railway line and development of Shigatse (Rikaze), Tibet's second largest city, as a rail transportation hub. The Chengdu-Lhasa railway will be the second strategic one connecting Tibet to the mainland and will be a high-speed railway.

At least 20 new border airports are planned to be built by 2025. Identified among these are airports at Tashkurgan and Longzi. Tashkurgan is at the extreme west of China and the last stop before the Karakoram Pass. It comes under the jurisdiction of the Hetian Military Sub-District, subordinate to the South Xinjiang Military District. The construction of the airport signals that China is increasing its capabilities in this area. It elevates the level of threat to Daulet Beg Oldi and the Depsang Plains. The additional airport at Longzi in Shannan County will similarly add to the People's Liberation Army Air Force (PLAAF)'s capabilities in the middle sector of LAC and the Yadong area.

India will have to contend with a much-improved strategic border defence infrastructure and considerably enhanced Chinese military presence that will pose a long-term potential threat. China's *14th Five Year Plan and the Long Range Objectives—2035* clearly point to a fraught and possibly dangerous period in India-China relations that lies ahead.

*(Jayadeva Ranade is former additional secretary, Cabinet Secretariat, Government of India, and president, of the Centre for China Analysis and Strategy. The views expressed are personal)*

<https://www.hindustantimes.com/opinion/chinas-plans-on-tibet-and-border-infra-will-pose-a-threat-to-india-101617191632382.html>



Thu, 01 April 2021

# Unravelling UK's AI Strategy to bolster its Defences

By Peter Mathew

- *The war methods are changing, and the UK is trying to keep up while India needs to get up to speed.*

Ben Wallace, the UK's Secretary of Defence, went on record to explain the Defense Command Paper, emphasising reducing the human element while reinforcing defences. This was proposed to be done with the aid of artificial intelligence.

While deploying a defence review, the Secretary of Defence highlighted the necessity for a “digital backbone” that can be established by sharing data over cloud technologies. Orating a speech, Ben Wallace also pointed out that it's understandable to focus on the number supporting the defence forces, but that also means deploying them at war zones with “Snatch Land Rovers” and tanks. However, on the other hand, the enemy is already advanced and has developed new ways to tackle such elements.

To combat and be ready for future threats, the Defence Command Paper focuses on defence intelligence where it brings into light the importance of AI. Creating and maintaining this digital backbone, Ben Wallace commented that a whopping £1.5 billion would be invested by the UK Strategic Command for the corresponding advancements over the next decade.

## **The 21st Century Chainmail**

Going into details, the digital backbone's main purpose will be to share, utilise, and protect huge quantities of information via cloud networks. Using this information, new approaches to training with the help of simulations and synthetics can be developed. This, in turn, can provide a change in scenery the way personnel are educated in the means of warfare and combat.

Focussing on the role of AI in the future, Ben Wallace stated to the media, “We will exploit a wider network of advanced surveillance platforms, classifications of data, and enhanced analysis using artificial intelligence.” Another motivation for identifying future threats with AI is to reduce the number of personnel deployed in warfare.

It is not the first time that the UK leans on the power of AI to strengthen and revolutionise its armed forces. Earlier this month, various military advisors from the country pitched to harness the aid of artificial intelligence to forecast enemy behaviour, execute reconnaissance, and receive real-time data from various combat zones.

## **Zooming out**

Looking at the things happening on a global scale, it is clear that the UK is cloning the US's move of hosting a new initiative that brought together 13 countries that share the same ideology of implementing AI in the sectors of defence. Unfortunately, India was not invited to join the partnership.

Irrespective to that, India has ensured that the Centre of Artificial Intelligence and Robotics (CAIR), a division within the DRDO, has created various AI-based devices aimed at net-centric communication systems. While on the other hand, to support surveillance and reconnaissance, CAIR has invented snake robots, Hexa bots, and sentries equipped with a wide library of AI-based algorithms meant for image and video recognition.

Nevertheless, like all other countries, India is also facing challenges in employing AI in its defence sectors. It is a new phenomenon to various policymakers who are still unclear about the mission and vision of equipping armed forces with AI. Also, the lack of robust infrastructure,

which is the bare necessity for introducing such unique technology, is another reason why India is still trailing in terms of defence compared to the likes of Russia, the USA, and China.

But with AI slowly being adopted by more and more countries, it will be interesting to see how India joins the ranks as they will be forced to before long.

<https://analyticshindiamag.com/unravelling-uks-ai-strategy-to-bolster-its-defences/>

## Science & Technology News



Thu, 01 April 2021

# Quantum material's subtle spin behavior proves theoretical predictions

By Elizabeth Rosenthal

Using complementary computing calculations and neutron scattering techniques, researchers from the Department of Energy's Oak Ridge and Lawrence Berkeley national laboratories and the University of California, Berkeley, discovered the existence of an elusive type of spin dynamics in a quantum mechanical system.

The team successfully simulated and measured how magnetic particles called spins can exhibit a type of motion known as Kardar-Parisi-Zhang, or KPZ, in solid materials at various temperatures. Until now, scientists had not found evidence of this particular phenomenon outside of soft matter and other classical materials.

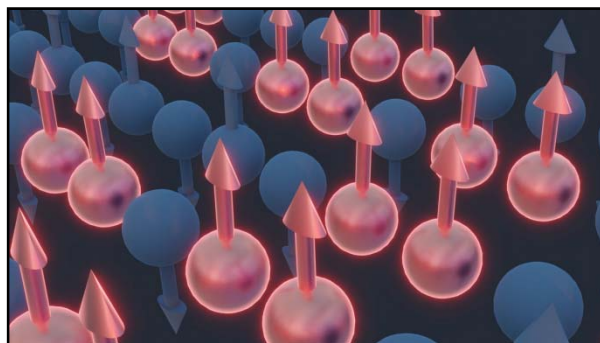
These findings, which were published in *Nature Physics*, show that the KPZ scenario accurately describes the changes in time of spin chains—linear channels of spins that interact with one another but largely ignore the surrounding environment—in certain quantum materials, confirming a previously unproven hypothesis.

"Seeing this kind of behavior was surprising, because this is one of the oldest problems in the quantum physics community, and spin chains are one of the key foundations of quantum mechanics," said Alan Tennant, who leads a project on quantum magnets at the Quantum Science Center, or QSC, headquartered at ORNL.

Observing this unconventional behavior provided the team with insights into the nuances of fluid properties and other underlying features of quantum systems that could eventually be harnessed for various applications. A better understanding of this phenomenon could inform the improvement of heat transport capabilities using spin chains or facilitate future efforts in the field of spintronics, which saves energy and reduces noise that can disrupt quantum processes by manipulating a material's spin instead of its charge.

Typically, spins proceed from place to place through either ballistic transport, in which they travel freely through space, or diffusive transport, in which they bounce randomly off impurities in the material—or each other—and slowly spread out.

But fluid spins are unpredictable, sometimes displaying unusual hydrodynamical properties, such as KPZ dynamics, an intermediate category between the two standard forms of spin transport.



The team simulated a single spin chain's KPZ behavior, then observed the phenomenon experimentally in multiple spin chains. Credit: Michelle Lehman/ORNL, U.S. Dept. of Energy



In this case, special quasiparticles roam randomly throughout a material and affect every other particle they touch.

"The idea of KPZ is that, if you look at how the interface between two materials evolves over time, you see a certain kind of scaling akin to a growing pile of sand or snow, like a form of real-world Tetris where shapes build on each other unevenly instead of filling in the gaps," said Joel Moore, a professor at UC Berkeley, senior faculty scientist at LBNL and chief scientist of the QSC.

Another everyday example of KPZ dynamics in action is the mark left on a table, coaster or other household surface by a hot cup of coffee. The shape of the coffee particles affects how they diffuse. Round particles pile up at the edge as the water evaporates, forming a ring-shaped stain. However, oval particles exhibit KPZ dynamics and prevent this movement by jamming together like Tetris blocks, resulting in a filled in circle.

KPZ behavior can be categorized as a universality class, meaning that it describes the commonalities between these seemingly unrelated systems based on the mathematical similarities of their structures in accordance with the KPZ equation, regardless of the microscopic details that make them unique.

To prepare for their experiment, the researchers first completed simulations with resources from ORNL's Compute and Data Environment for Science, as well as LBNL's Lawrence Livermore computational cluster and the National Energy Research Scientific Computing Center, a DOE Office of Science user facility located at LBNL. Using the Heisenberg model of isotropic spins, they simulated the KPZ dynamics demonstrated by a single 1D spin chain within potassium copper fluoride.

"This material has been studied for almost 50 years because of its 1D behavior, and we chose to focus on it because previous theoretical simulations showed that this setting was likely to yield KPZ hydrodynamics," said Allen Scheie, a postdoctoral research associate at ORNL.

The team then used the SEQUOIA spectrometer at the Spallation Neutron Source, a DOE Office of Science user facility located at ORNL, to examine a previously unexplored region within a physical crystal sample and to measure the collective KPZ activity of real, physical spin chains. Neutrons are an exceptional experimental tool for understanding complex magnetic behavior due to their neutral charge and magnetic moment and their ability to penetrate materials deeply in a nondestructive fashion.

Both methods revealed evidence of KPZ behavior at room temperature, a surprising accomplishment considering that quantum systems usually must be cooled to almost absolute zero to exhibit quantum mechanical effects. The researchers anticipate that these results would remain unchanged, regardless of variations in temperature.

"We're seeing pretty subtle quantum effects surviving to high temperatures, and that's an ideal scenario because it demonstrates that understanding and controlling magnetic networks can help us harness the power of quantum mechanical properties," Tennant said.

This project began during the development of the QSC, one of five recently launched Quantum Information Science Research Centers competitively awarded to multi-institutional teams by DOE. The researchers had realized their combined interests and expertise perfectly positioned them to tackle this notoriously difficult research challenge.

Through the QSC and other avenues, they plan to complete related experiments to cultivate a better understanding of 1D spin chains under the influence of a magnetic field, as well as similar projects focused on 2D systems.

"We showed spin moving in a special quantum mechanical way, even at high temperatures, and that opens up possibilities for many new research directions," Moore said.

**More information:** A. Scheie et al, Detection of Kardar–Parisi–Zhang hydrodynamics in a quantum Heisenberg spin-1/2 chain, *Nature Physics* (2021). DOI: [10.1038/s41567-021-01191-6](https://doi.org/10.1038/s41567-021-01191-6)

**Journal information:** [Nature Physics](https://www.nature.com/subjects/condensed-matter-physics)

<https://phys.org/news/2021-03-quantum-material-subtle-behavior-theoretical.html>

## Study shows promise of quantum computing using factory-made silicon chips

The qubit is the building block of quantum computing, analogous to the bit in classical computers. To perform error-free calculations, quantum computers of the future are likely to need at least millions of qubits. The latest study, published in the journal *PRX Quantum*, suggests that these computers could be made with industrial-grade silicon chips using existing manufacturing processes, instead of adopting new manufacturing processes or even newly discovered particles.

For the study, researchers were able to isolate and measure the quantum state of a single electron (the qubit) in a silicon transistor manufactured using a 'CMOS' technology similar to that used to make chips in computer processors.

Furthermore, the spin of the electron was found to remain stable for a period of up to nine seconds. The next step is to use a similar manufacturing technology to show how an array of qubits can interact to perform quantum logic operations.

Professor John Morton (London Centre for Nanotechnology at UCL), co-founder of Quantum Motion, said: "We're hacking the process of creating qubits, so the same kind of technology that makes the chip in a smartphone can be used to build quantum computers.

"It has taken 70 years for transistor development to reach where we are today in computing and we can't spend another 70 years trying to invent new manufacturing processes to build quantum computers. We need millions of qubits and an ultra-scalable architecture for building them, our discovery gives us a blueprint to shortcut our way to industrial scale quantum chip production."

The experiments were performed by Ph.D. student Virginia Ciriano Tejel (London Centre for Nanotechnology at UCL) and colleagues working in a low-temperature laboratory. During operation, the chips are kept in a refrigerated state, cooled to a fraction of a degree above absolute zero (-273 degrees Celsius).

Ms Ciriano Tejel said: "Every physics student learns in textbooks that electrons behave like tiny magnets with weird quantum properties, but nothing prepares you for the feeling of wonder in the lab, being able to watch this 'spin' of a single electron with your own eyes, sometimes pointing up, sometimes down. It's thrilling to be a scientist trying to understand the world and at the same time be part of the development of quantum computers."

A quantum computer harnesses laws of physics that are normally seen only at the atomic and subatomic level (for instance, that particles can be in two places simultaneously). Quantum computers could be more powerful than today's super computers and capable of performing complex calculations that are otherwise practically impossible.

While the applications of quantum computing differ from traditional computers, they will enable us to be more accurate and faster in hugely challenging areas such as drug development and tackling climate change, as well as more everyday problems that have huge numbers of variables—just as in nature—such as transport and logistics.

Provided by [University College London](https://www.ucl.ac.uk)

<https://phys.org/news/2021-03-quantum-factory-made-silicon-chips.html>



The dilution fridge at UCL.  
Credit: A. Abrusci / UCL

## A successful phonon calculation within the quantum Monte Carlo framework

The focus and ultimate goal of computational research in materials science and condensed matter physics is to solve the Schrödinger equation—the fundamental equation describing how electrons behave inside matter—exactly (without resorting to simplifying approximations). While experiments can certainly provide interesting insights into a material's properties, it is often computations that reveal the underlying physical mechanism. However, computations need not rely on experimental data and can, in fact, be performed independently, an approach known as "ab initio calculations." The density functional theory (DFT) is a popular example of such an approach.

For most material scientists and condensed matter physicists, DFT calculations are the bread and butter of their profession. However, despite being a powerful technique, DFT has had limited success with "strongly correlated materials"—materials with unusual electronic and magnetic properties. These materials, while interesting on their own, also possess technological useful properties, a fact that strongly motivates an ab initio framework suited to describe them.

To that end, a framework known as "ab initio quantum Monte Carlo" (QMC) has shown considerable promise and is expected to be the next generation of electronic structure calculations due to its superiority over DFT. However, even QMC is largely restricted to calculations of energy and atomic forces, limiting its utility in computing useful material properties.

Now, in a breakthrough study published in *Physical Review B* (Editors' Suggestion), scientists have taken things to the next level based on an approach that allows them to reduce the statistical error in atomic force evaluation by two orders of magnitude and subsequently speeds up the computation by a factor of  $10^4$ ! "The drastic reduction in computational time will greatly expand the range of QMC calculations and enable highly accurate prediction of atomic properties of materials that have been difficult to handle," observes Assistant Professor Kousuke Nakano from Japan Advanced Institute of Science and Technology (JAIST), who, along with his colleagues Prof. Ryo Maezono from JAIST, Prof. Sandro Sorella from International School for advanced Studies (SISSA), Italy, and Dr. Tommaso Morresi and Prof. Michele Casula from Sorbonne Université, France, led this groundbreaking achievement.

The team applied their developed method to calculate the atomic vibrations of diamond, a typical reference material, as a proof-of-concept and showed that the results were consistent with experimental values. To perform these calculations, they used a large computer, Cray-XC40, located at the Research Center for Advanced Computing Infrastructure at Japan Advanced Institute of Science and Technology (JAIST), Japan, along with another located at RIKEN, Japan. The team made use of a QMC software package called "TurboRVB," initially launched by Prof. Sorella and Prof. Casula and developed later by Prof. Nakano along with others, to perform phonon dispersion calculations for diamond that were previously inaccessible, greatly expanding its scope.

Prof. Nakano looks forward to the applications of QMC in materials informatics (MI), a field dedicated to the design and search for novel materials using techniques of information science and computational physics. "While MI is currently governed by DFT, the rapid developments in computer performance, such as the exascale supercomputer, will help QMC gain popularity. In that regard, our developed method is going to be very useful for designing novel materials with real-life applications," concludes an optimistic Dr. Nakano.

**More information:** Kousuke Nakano et al, Atomic forces by quantum Monte Carlo: Application to phonon dispersion calculations, *Physical Review B* (2021). [DOI: 10.1103/PhysRevB.103.L121110](https://doi.org/10.1103/PhysRevB.103.L121110)

**Journal information:** [Physical Review B](https://phys.org/news/2021-03-successful-phonon-quantum-monte-carlo.html)

<https://phys.org/news/2021-03-successful-phonon-quantum-monte-carlo.html>

Thu, 01 April 2021

### T cells induced by Covid-19 infection respond to new virus variants: US study

*T cells that respond to fight infection from the original version of the novel coronavirus appear to also protect against three of the most concerning new virus variants, according to a US laboratory study released on Tuesday*

Chicago: A critical component of the immune system known as T cells that respond to fight infection from the original version of the novel coronavirus appear to also protect against three of the most concerning new virus variants, according to a US laboratory study released on Tuesday.

Several recent studies have shown that certain variants of the novel coronavirus can undermine immune protection from antibodies and vaccines.

But antibodies - which block the coronavirus from attaching to human cells - may not tell the whole story, according to the study by researchers at the National Institute of Allergy and Infectious Diseases (NIAID). T cells appear to play an important additionally protective role.

“Our data, as well as the results from other groups, shows that the T cell response to COVID-19 in individuals infected with the initial viral variants appears to fully recognize the major new variants identified in the UK, South Africa and Brazil,” said Andrew Redd of the NIAID and Johns Hopkins University School of Medicine who led the study.

The researchers analyzed blood from 30 people who had recovered from COVID-19 before the emergence of the new more contagious variants.

From those samples, they identified a specific form of T cell that was active against the virus, and looked to see how these T cells fared against the concerning variants from South Africa, the UK and Brazil.

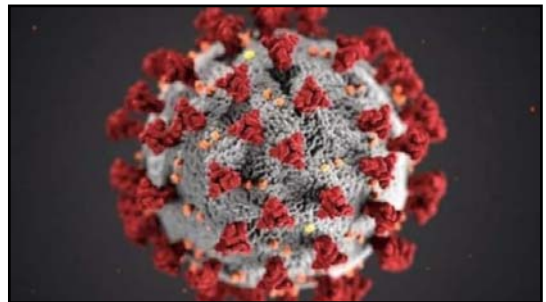
They found the T-cell responses remained largely intact and could recognize virtually all mutations in the variants studied.

The findings add to a prior study that also suggested T cell protection appears to remain intact against the variants.

The NIAID researchers said larger studies are needed to confirm the findings. Continued monitoring for variants that escape both antibody and T cell protection is needed, Redd said.

The paper has been accepted for publication in Open Forum Infectious Diseases but has yet to be peer reviewed.

<https://www.indiatoday.in/world/story/t-cells-induced-by-covid-19-infection-respond-to-new-virus-variants-us-study-1785448-2021-03-31>



The findings add to a prior study that also suggested T cell protection appears to remain intact against the variants. (Representational)

