

Sidebands

Alexei Abrikosov: 1928–2017

The Nobel laureate Alexei Abrikosov died on 29 March at the age of 88. Born in Moscow on 25 June 1928, Abrikosov completed his undergraduate degree in physics at Moscow State University in 1948 before studying for a PhD in physics at the Institute for Physical Problems in Moscow, graduating in 1951. After working at a number of institutions in Moscow, Abrikosov moved to Argonne National Laboratory in the US in 1991 where he remained for the rest of his career. Together with Vitaly Ginzburg of the P N Lebedev Physical Institute in Moscow, Abrikosov developed a theory for “type-II” superconducting materials in which superconductivity and magnetism can co-exist. In 2003 Abrikosov shared the Nobel Prize for Physics with Ginzburg and Anthony Leggett of the University of Illinois at Urbana “for their pioneering contributions to the theory of superconductors and superfluidity”.

Ion-trap pioneer Hans Dehmelt dies

Hans Dehmelt, the German-born US physicist who shared the 1989 Nobel Prize for Physics for the development of ion traps, died on 7 March at the age of 94. Born in Görlitz on 9 September 1922, Dehmelt gained a Master’s degree in physics in 1948 and a PhD in 1950 from the University of Göttingen. In 1952 he went to Duke University in the US, before moving to the University of Washington in 1955, where he remained for the rest of his career until retiring in 2002. Dehmelt developed the Penning trap, which uses magnetic and electric fields to trap ions and electrons, allowing them to be studied to high precision. For this breakthrough, Dehmelt shared half the 1989 Nobel prize together with Wolfgang Paul, with US physicist Norman Ramsey being awarded the other half for probing the structure of atoms to high precision.

NASA goes for GUSTO

NASA has given the green light to the balloon-borne GUSTO terahertz observatory that will map and measure emissions from the interstellar medium. The \$40m mission is scheduled for launch in 2021 from Antarctica and will last between 100 and 170 days, depending on the weather at the time. The balloon will carry a spectroscopic telescope that will detect emission lines from carbon, oxygen and nitrogen, with the aim of shedding light on the life-cycle of the gas found in the regions between stars in the Milky Way and a nearby galaxy called the Large Magellanic Cloud.

Funding

Brazilian science faces swingeing cuts

A number of “big-science” projects in Brazil could be hit if the government pushes through a 44% cut to the R\$5bn (£1.28bn) budget of the Ministry of Science, Technology, Innovations and Communications (MCTIC). The government says that the reduction is needed to cover a R\$58bn deficit in Brazil’s federal budget and to help the country overcome industrial recession and high unemployment. Brazil’s education ministry, which maintains all federal universities in the country, will see its budget halve, with individual states unable to pick up the slack due to the poor economic performance across the country.

The cuts to the MCTIC come after it had already lost around R\$322m that was due to be allocated to “PAC” projects – a federal initiative to improve the country’s economic growth. “Given that the MCTIC has already been fused with the Ministry of Communications, the amount of money designated to science and technology has already been reduced,” says Brazilian atmospheric physicist Paulo Artaxo from the University of São Paulo. “The Brazilian science budget is now approximately 15% of what it was four years ago, while the science community has increased substantially. Without sufficient funds, an entire generation of young researchers in Brazil could be lost.”

Artaxo is president of the Large-Scale Biosphere-Atmosphere Experiment (LBA) in Amazonia, which seeks to study the many ecosystems that exist in the Amazonian rainforest. He says that LBA projects have ground to a halt since last year, despite it having just finished building a 325-m-high observatory tower in collaboration with the Max Planck Institute for Chemistry in Mainz, Germany. “It is the best in its category on the planet,” Artaxo says. “However, we do not have sufficient funds to start research employing this platform, which is strategic not only for the project, but also to the country.”

Luiz Davidovich, a physicist at the Federal University of Rio de Janeiro who is also president of the Brazilian Academy of Science, says the cuts to science threaten the payment of projects that have already received



LBA

Out of action

Despite being finished last year, the Large-Scale Biosphere-Atmosphere Experiment in Amazonia is not being used due to funding cuts.

the go-ahead from federal agencies. “Labs that had received investments in the last decades have now put their activities on hold because they lack resources and cannot afford spare parts for equipment,” says Davidovich. “Those cuts and restraints represent a waste of public money that has already been spent.”

In a statement, the MCTIC says its finance department has been evaluating the impact of the cuts and the actions resulting from that analysis will be made public soon. “If the budget cuts are maintained, we may be risking the fulfilment of the idea conveyed by the title of the famous book by the Colombian writer Gabriel García Márquez, *Chronicle of a Death Foretold*,” adds Davidovich.

Antonio José Roque da Silva, director of Brazil’s National Synchrotron Light Laboratory, says that it is still too soon to predict the consequences of the cuts. “The [government budget] does not stipulate which topics should suffer the cuts, but it is likely to affect the MCTIC as a whole,” says da Silva, a physicist whose lab is building Sirius – an advanced, fourth-generation synchrotron light source. “It will be up to the ministry whether or not to prioritize the PAC projects, which includes Sirius.”

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