

Ukrainian physics journal celebrates a half century FREE

The editors of Fizyka Nyzkykh Temperatur (Low Temperature Physics) have continued publishing despite Ukraine's war with Russia.

Toni Feder



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Rallying for science across the US

Crowds gathered on the National Mall in Washington, DC, and in cities across the US on 7 March to protest the Trump administration's actions undercutting US science. Federal agencies have slashed or paused research funding, deleted public data, ordered mass layoffs, and attacked diversity, equity, and inclusion (DEI) initiatives. "We are looking at the most aggressively anti-science government the United States has ever had," said astronomer Philip Plait. He was among the speakers in the nation's capital at the Stand Up for Science rally, which drew 5000 federal employees, affected scientists, and others.

Several attendees at the DC rally spoke to *PHYSICS TODAY*. A plasma physicist talked about early-career scientists and

graduate students losing their jobs and funding. National Institutes of Health employees said layoffs and funding cuts have shrunk their labs and slowed their scientific research. A professor at Howard University said she worries about the removal of DEI funding that supports much of her lab's work.

"The administration is firing, and bullying, and threatening scientists and workers across the government who make the world a better place," said speaker Gretchen Goldman, an environmental engineer and president of the Union of Concerned Scientists. She added that "we stand together today to raise our voices together and to tell the administration that we will not back down."

Jenessa Duncombe



THE STAND UP FOR SCIENCE RALLY in Washington, DC, drew about 5000 protesters. (Photo by Laura Fattaruso.)

Ukrainian physics journal celebrates a half century

The editors of *Fizyka Nyzkykh Temperatur* (*Low Temperature Physics*) have continued publishing despite Ukraine's war with Russia.

Not a month has passed since 1975 without the release of a new issue of *Fizyka Nyzkykh Temperatur* (FNT). The journal, which is published jointly by the B. Verkin Institute for Low Temperature Physics and Engineering and the National Academy of Sciences of Ukraine, marked 50 years in January. It

is translated into English and published as *Low Temperature Physics* by AIP Publishing. (AIP Publishing is owned by the American Institute of Physics, which publishes *PHYSICS TODAY*.)

Publishing FNT has been tough in the three-plus years since Russia invaded Ukraine in February 2022. The

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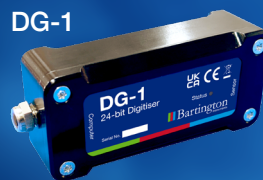
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AN EDITORIAL MEETING of the Ukrainian journal *Fizyka Nyzkykh Temperatur* that took place before Russia's 2022 invasion of Ukraine. (Photo from *Fizyka Nyzkykh Temperatur*.)



THE JOURNAL HEADQUARTERS in Kharkiv was damaged by multiple bombings early in the war. (Photo by Volodymyr Repin, deputy director of the B. Verkin Institute for Low Temperature Physics and Engineering of the National Academy of Sciences of Ukraine.)

issues put together in the days and weeks following the invasion were the slimmest in the journal's history. They were also the most difficult to prepare and publish. That's according to Yurii Naidyuk, Konstantyn Matsiyevskiy, and Olexandr Dolbyn, respectively the journal's editor-in-chief, its managing editor, and the acting director of the B. Verkin Institute for Low Temperature Physics and Engineering, where the journal is headquartered. (Ukrainian physicist Boris Verkin founded both the institute and the journal.) The three physicists responded jointly via email to *Physics Today*'s queries.

In the first few months of the war, bombs and artillery repeatedly damaged the institute, which is in Kharkiv, some 40 kilometers from the Russian border. More than 500 of the institute's windows were destroyed, and its buildings were left without heat, electricity, water, or sewage services, according to the three physicists.

Editors and staff first had to "save their own families and children from the daily raids of enemy aircraft and artillery shelling," the physicists wrote, noting that many employees sought refuge in western cities of Ukraine and in other European countries. For a while, the physicists added, editorial work and the monthly printing of the magazine from "within the walls of the institution was out of the question." The Institute of Low Temperature and Structure Research of the Polish Academy of Sciences in Wrocław provided editorial

space and computer servers for saving data and the journal's website.

Six months after the invasion, *FNT* resumed publishing from its Kharkiv headquarters. The bombings and raids continue, and the editorial team is still scattered—in Ukraine, Poland, Switzerland, and beyond. As of press time, *FNT* had published 477 articles in the three

years since the invasion. Authors hail from around the globe, but after the invasion, the journal stopped accepting submissions from Russia and Belarus, the *FNT* physicists wrote.

Over the half century of its existence, *FNT* has published some 10 000 articles in areas including quantum liquids, disordered systems, biophysics,

and methods in low-temperature experiments. It has featured many special issues, including ones celebrating the centenary of the production of liquid helium (2008), the 30th anniversary of the discovery of high-temperature superconductivity (2016), and advances in quantum materials (2023).

Toni Feder

Q&A: Frank Close probes quarks and popularizes science

He has written books on quarks, protons, spies, nuclear threats, and more.

Writing about science for a broad audience and researching in the rarefied area of quarks bear some resemblance, according to Frank Close. He should know.

For much of his career as a theoretical physicist, Close was also writing articles and books for the public, and he has continued writing since retiring from research in 2010. His books—21 and counting—include a coffee table collection of images from particle physics; a profile of Peter Higgs and the boson named for him; the cold fusion controversy; and dives into Klaus Fuchs and Bruno Pontecorvo, physicists who both worked on the Manhattan Project and were, respectively, confirmed and suspected spies.

His 22nd book, *Destroyer of Worlds: The Deep History of the Nuclear Age*, is due out in June. He wrote it over the course of 27 weeks in 2023 while undergoing chemotherapy and radiation for non-Hodgkin's lymphoma. The irony, he says, is that he was writing about how nuclear physics led to bad things while he was benefiting from some of its good things—PET scans, radiology, and the like.

Researching for a book is “like a classical scientific research project,” Close says. Much research in science is not greatly different from being a detec-

tive in the police force or what have you, he adds. “It’s trying to find out, How much do we know? What are the known unknowns?”

For his scientific research, Close focused on quantum chromodynamics (QCD), quarks, and gluonic hadrons. After earning his PhD at Oxford University in 1970, he did postdocs at SLAC and CERN, and then he spent most of his research career at Rutherford Appleton Laboratory in Oxfordshire, UK.

PT: Why did you go into physics?

CLOSE: My high school chemistry teacher told us that everything was made of atoms and that atoms of one

element and another element differed only by the number of electrons whirling around the central nucleus. That was a mind-blowing revelation.

I thought, “If I can understand how that works, I can derive all the other stuff from it.” Six decades later, I haven’t managed to do that, but that was how I suddenly understood that physics underlies everything.

PT: Describe your career path.

CLOSE: I happened to be starting my PhD research in 1967 in Oxford, one of the few places in the world that took quarks even semiseriously at the time. Luckily for me, I got in on the ground floor.



FRANK CLOSE (Photo courtesy of Frank Close.)