



**National Technical University  
"Kharkiv Polytechnic Institute"**  
**Collaboration with Outstanding Scientists –  
Nobel Prize Laureates**





## Nobel Laureates Giving Lectures at NTU "KhPI"

### Anniversary XXX International Scientific and Practical Conference "Information Technologies: Science, Engineering, Technology, Education, Health" MicroCAD-2022

In October 2022, the university hosted the anniversary MicroCAD conference. More than two thousand scientists, educators, and specialists from Ukraine and abroad participated. One of the keynote speakers was Nobel Prize Laureate in Physics, theoretical physicist, expert in condensed matter theory, member of the Royal Society, the American Physical Society, and the Institute of Physics (UK), Professor at Princeton University — Duncan Haldane.



The conference included twelve large sections — ranging from energy and electronics to international business, medical sciences, and national security.

Professor Haldane expressed his support for Ukraine and for Kharkiv as one of its powerful scientific centers. He thanked Ukrainian scientists for their significant contributions to the future of the country and the world. Earlier, Duncan Haldane was among the 200 Nobel laureates who signed the open "Letter of 200" in support of Ukraine.





### XXXI International Scientific and Practical Conference "Information Technologies: Science, Engineering, Technology, Education, Health" MicroCAD-2023

At the plenary session of MicroCAD-2023 in May 2023, a lecture was delivered by experimental physicist, Nobel Prize Laureate in Physics (1997), honorary head of the laser cooling and trapping group, and researcher at the National Institute of Standards and Technology (NIST) in the USA — Professor William D. Phillips. After the lecture, Professor Phillips answered questions from the plenary participants. He welcomed the attendees and emphasized that even in such difficult times, science in Ukraine continues to develop. His lecture was devoted to the reform of the international system of units: "The Quantum Reform of the International System of Units."





**The Quantum Reform of the International System of Units**

International Scientific and Practical Conference  
**MicroCAD-2023, Plenary Session**  
Kharkiv Polytechnic Institute (online)  
May 17, 2023

**William D. Phillips**  
Joint Quantum Institute  
National Institute of Standards and Technology, Gaithersburg, MD  
University of Maryland, College Park, MD

**NIST Laser Cooling and Trapping Group:**  
**Gretchen Campbell, Paul Lett, Trey Porto, Ian Spielman,**  
**Eite Tiesinga, Charles Clark, Paul Julienne, Nicole Yunger Halpern**







## Scientific Events Dedicated to Science Day in Ukraine – 2024

In May 2024, NTU "KhPI" hosted an online lecture by Nobel Prize Laureate in Physics, renowned Japanese physicist and cosmic neutrino researcher Takaaki Kajita. The lecture focused on studying the Universe through neutrinos and gravitational waves.

The event gathered nearly 300 scientists from Ukraine, Germany, Hungary, Bulgaria, Poland, Romania, and Belgium. It was part of the many celebratory events held at Kharkiv Polytechnic Institute for Science Day.

Professor Kajita dedicated his lecture to neutrinos – stable, electrically neutral elementary particles with near-zero mass.

He also explained gravitational waves – their origin, relationships, and measurement methods.

The Nobel laureate emphasized that neutrinos are key to a deeper understanding of elementary particles and the Universe. They may enable many fundamental discoveries in the future.

At the end of the event, the scientist wished all Ukrainians peace and the opportunity to work together on scientific research. Professor Kajita was among 194 Nobel Prize winners who in 2022 expressed their support for the Ukrainian people and for a free and independent Ukraine after the start of Russia's war of aggression.

Takaaki Kajita is also a signatory of the letter opposing the regime of Vladimir Putin, joining other leading figures in science, economics, and literature in calling on the global community to increase support for Ukraine in its resistance to Russian aggression.

Discovery of neutrino oscillations (Super-Kamiokande @Neutrino 98, 1998)

Y. Fukuda et al., PRL 81 (1998) 1562

Number of Events

Muon-neutrinos

Simulation

Data

256

139

Up-going (from the other side of the Earth)

Down-going

Super-Kamiokande

$\mu$ -neutrino

$\tau$ -neutrino

Multi-messenger astronomy with neutrinos and GWs

SN1987A

If a supernova explodes at the center of the Milky Way...

Gravitational waves

Neutrinos

Truly understanding the mechanism of the Supernova explosion!

+optical observations, + Simulations