



National Science Center
“Kharkov Institute of Physics and Technology”
National Academy of Sciences of Ukraine



National Academy of Sciences of Ukraine Nuclear Physics and Power Division



National Science Center “Kharkov Institute of Physics & Technology”

the oldest and largest center of physical science in Ukraine, was created in 1928

At 1991 nearly 6000 employee worked in KIPT, but now we have about 1900 employee

Among them: 300 PhD and 80 Doctors of Science

- *Institute of Solid-state Physics, Materials Science and Technologies* (physics of radiation effects, radiation materials science and technologies)
- *Institute of Plasma Physics* (plasma physics and controlled fusion)
- *Institute of High Energy Physics and Nuclear Physics*
- *Institute of Plasma Electronics and New Methods of Acceleration*
- *Akhiezer Institute for Theoretical Physics* (All branches of Physics)
- *R&D Complex "Accelerator"* (physics and engineering of accelerators)
- *Technological Complex "Nuclear Fuel Cycle"*
- *Research Facility "Neutron Source"* (ADS)

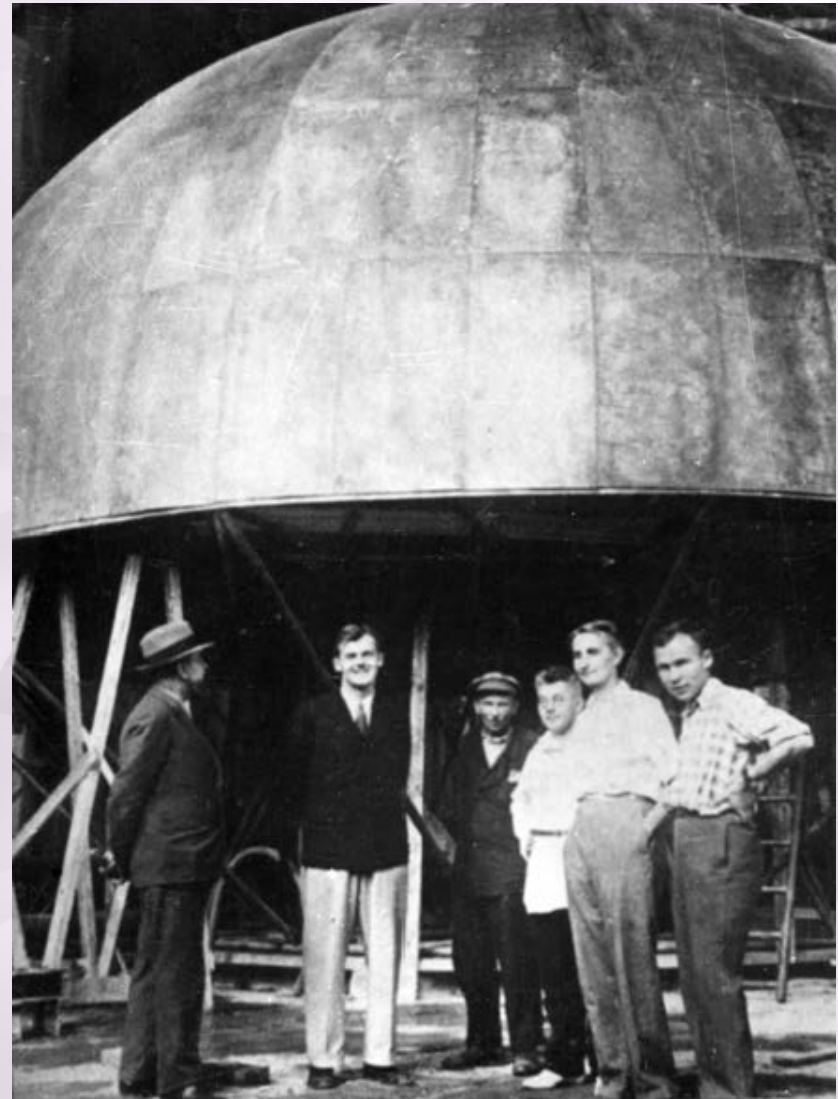
UFTI in 1930's

Many outstanding physicists worked at UFTI in 1930's. Among them are:

Lev Landau, E. Lifshits, I. Lifshits, A. Akhiezer, I. Pomeranchuk, L. Shubnikov, A. Leypunsky, K. Sinelnikov, V. Weisskopf, F. Hautermans, F. Lange, L. Tisza and others.

P. Dirac, P. Ehrenfest, P. Kapitsa, G. Gamow were the members of Scientific Consul of UFTI.

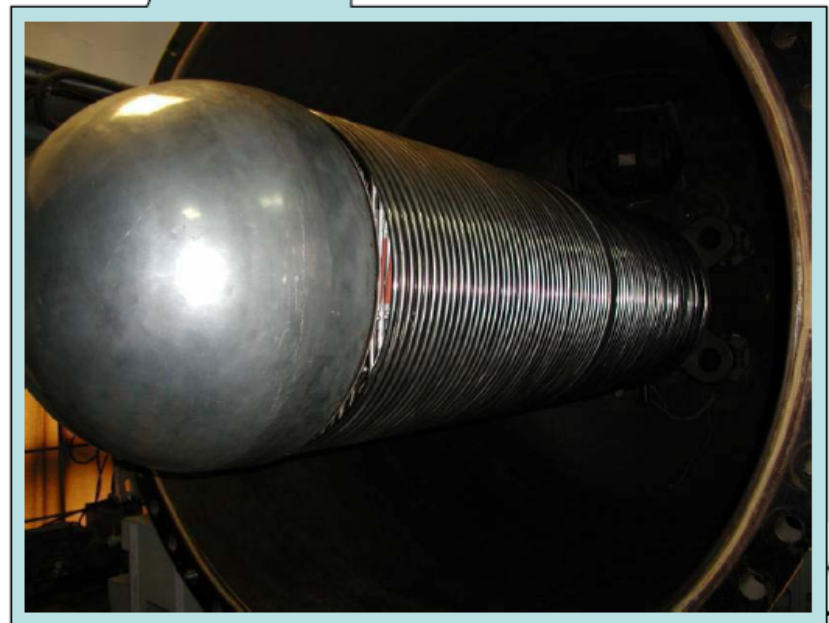
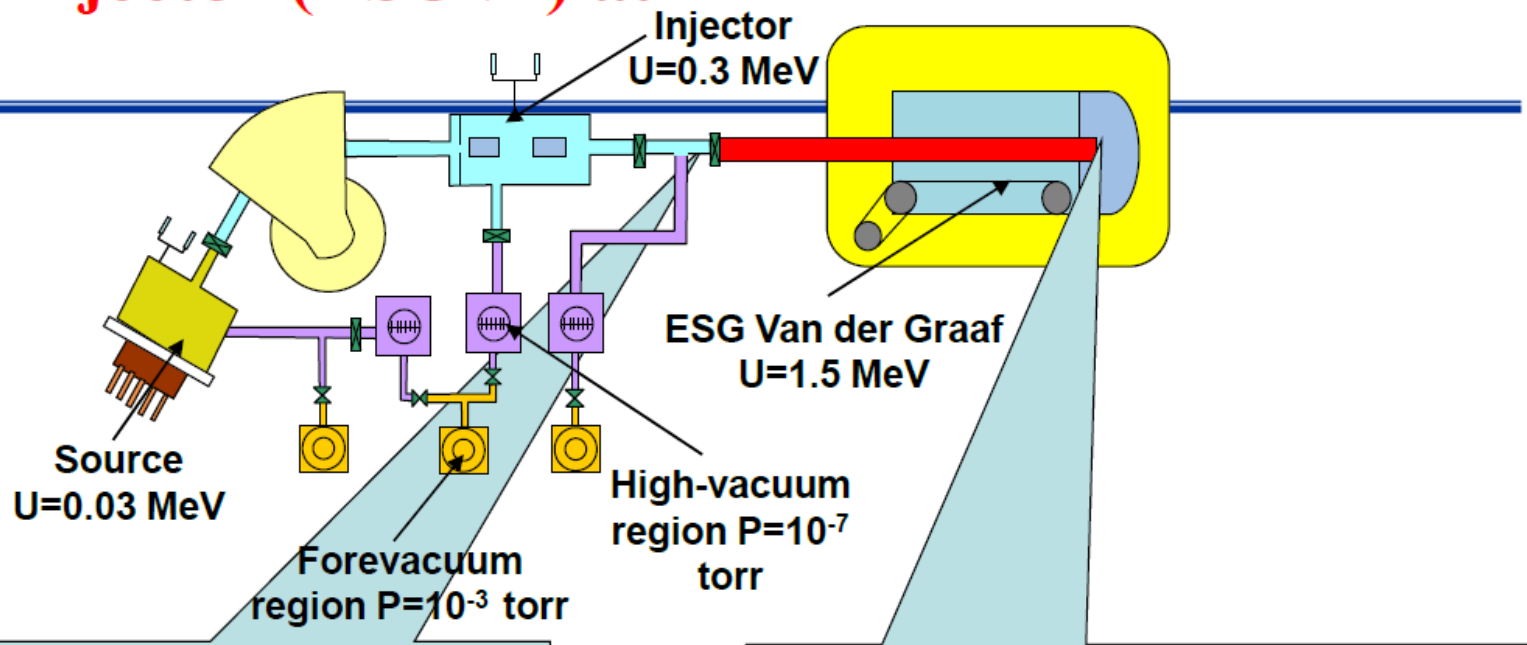
Next to the creation of an electrostatic generator at UFTI. Second from the left - Robert Van de Graaf, second from the right - K.D. Sinelnikov



UFTI was the Laboratory #1 of the Soviet Atomic Project in 1946



Electrostatic Accelerator with External Injector (ESUVI) at KIPT



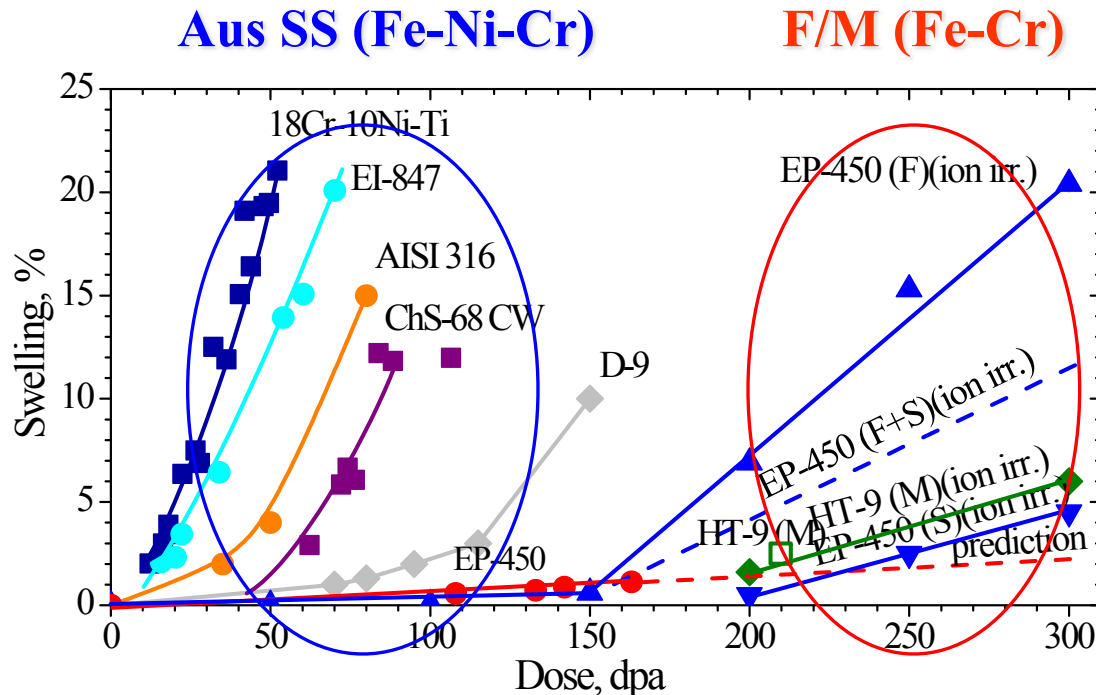
What was done in KIPT on swelling of steels

➤ Various nuclear concepts require low void swelling of structural materials at very high exposures (>200 dpa), high temperatures (700°C) and at **super high levels** of helium and hydrogen:

Fusion: He – 300 appm/y, H - 800 appm/y

ADS“ Spallation”: He – 3500 appm/y, H - 4000 appm/y

➤ Due to high swelling of austenitic steels (life-limited by swelling to 150 dpa) the nuclear materials community has moved toward ferritic and ferritic/martensitic alloys.

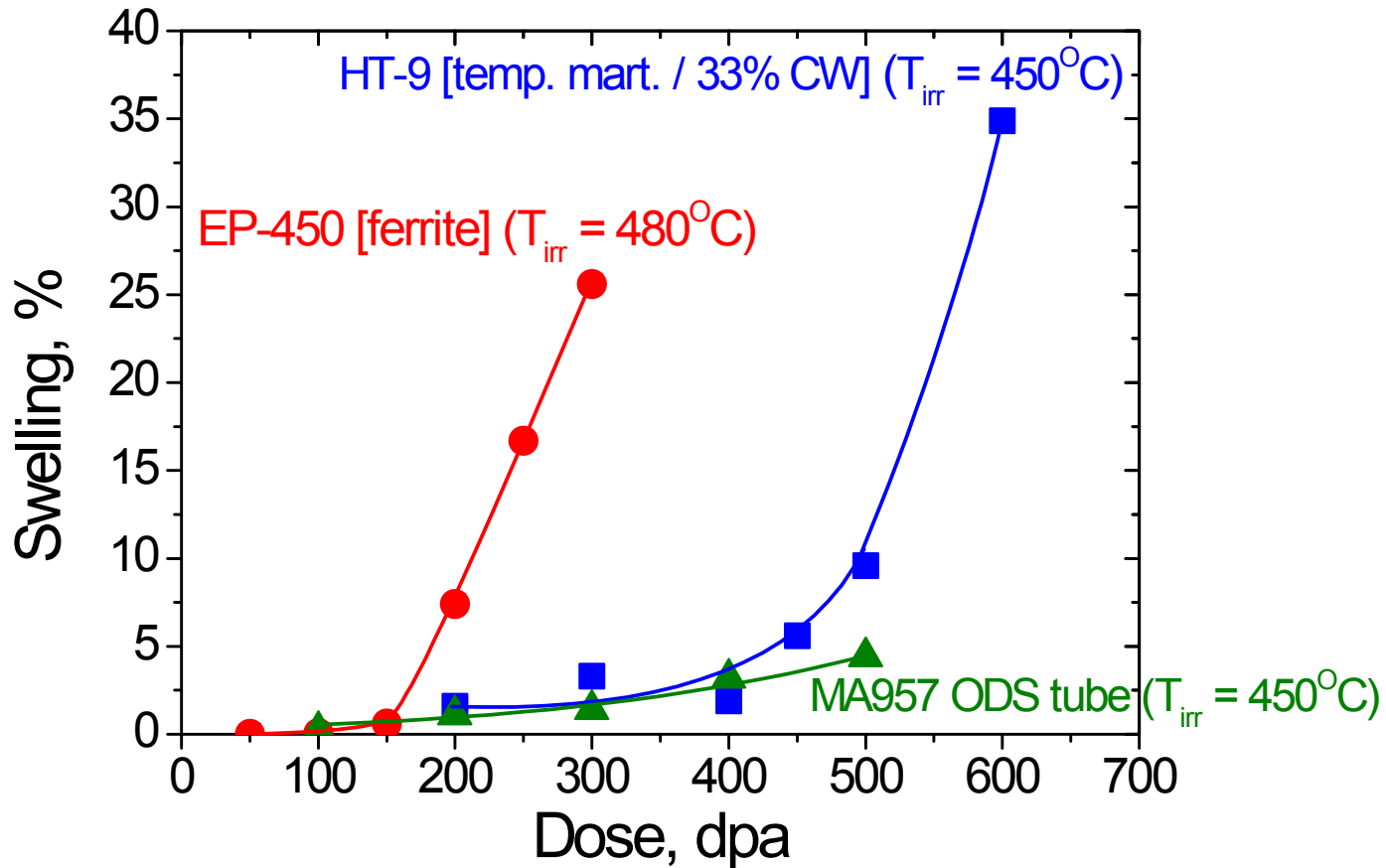


Austenitic alloys were irradiated with ions about 25 years ago, but were not published in the West.

F/M alloys were irradiated in KIPT during several years.

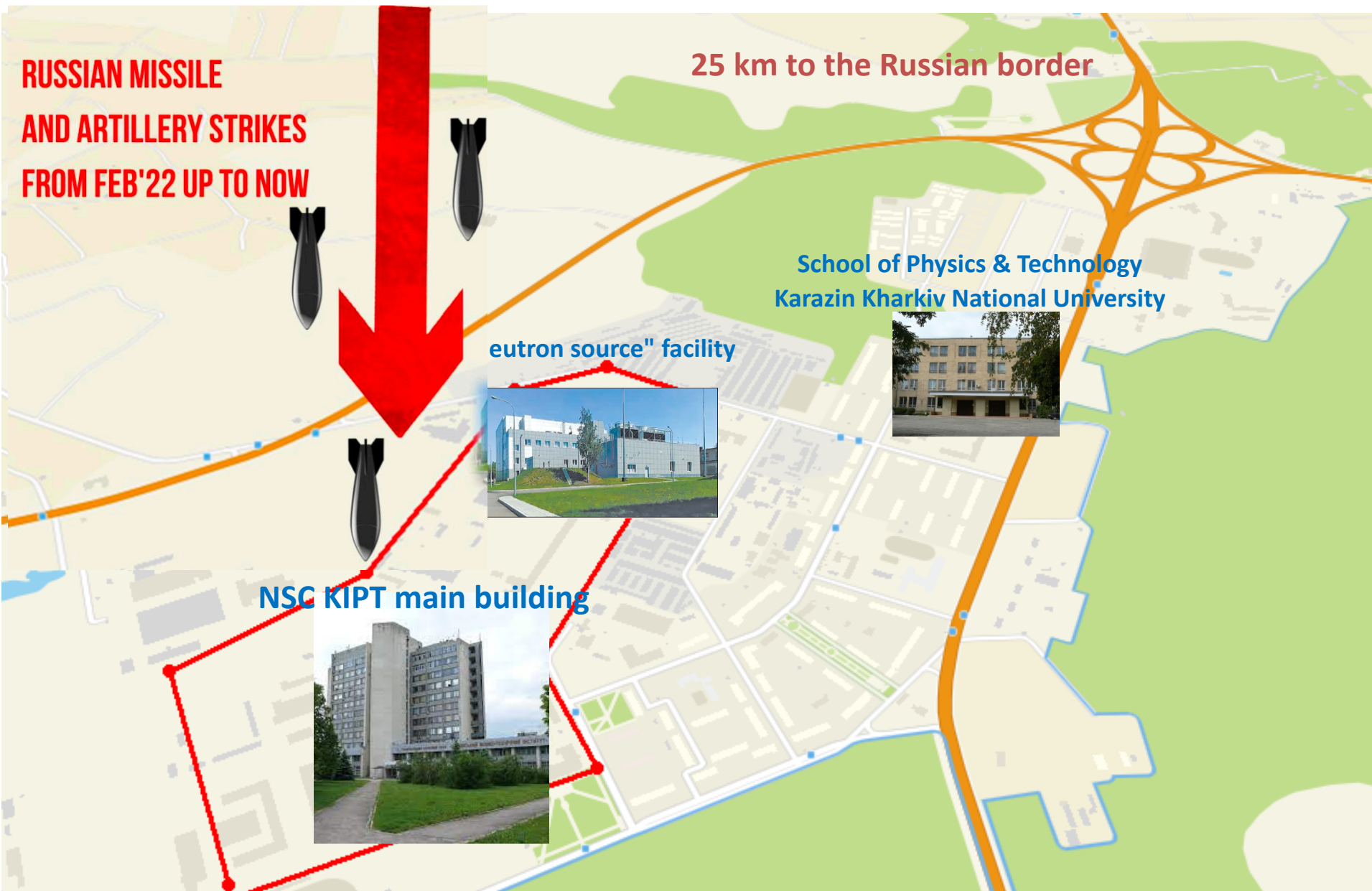


Dose dependence of swelling of three ferritic-martensitic steels



Denuded zone effect in very narrow grains depresses the overall swelling somewhat. (ODS - Oxide dispersion-strengthened)

Science town "Pyatikhatki"





IMPACT OF RUSSIAN INVASION OF UKRAINE

KIPT INSTITUTE FOR SOLID STATE PHYSICS, MATERIALS SCIENCE AND TECHNOLOGIES

ISSPMT building (1500m²)
was destroyed

Walls of other 3 research buildings were destroyed





IMPACT OF RUSSIAN INVASION OF UKRAINE

KIPT INSTITUTE FOR SOLID STATE PHYSICS, MATERIALS SCIENCE AND TECHNOLOGIES

Fully or partly destroyed
research equipment in
12 lab premises





NSC “Kharkov Institute of Physics and Technology”





NSC KIPT Neutron Source Facility

in collaboration with Argonne National Laboratory



President of Ukraine P.A. Poroshenko visited NSC KIPT (March 2016) for the official opening of the Research Facility “Neutron Source”





**ХАРКІВСЬКА
ОБЛАСНА
ПРОКУРАТУРА**

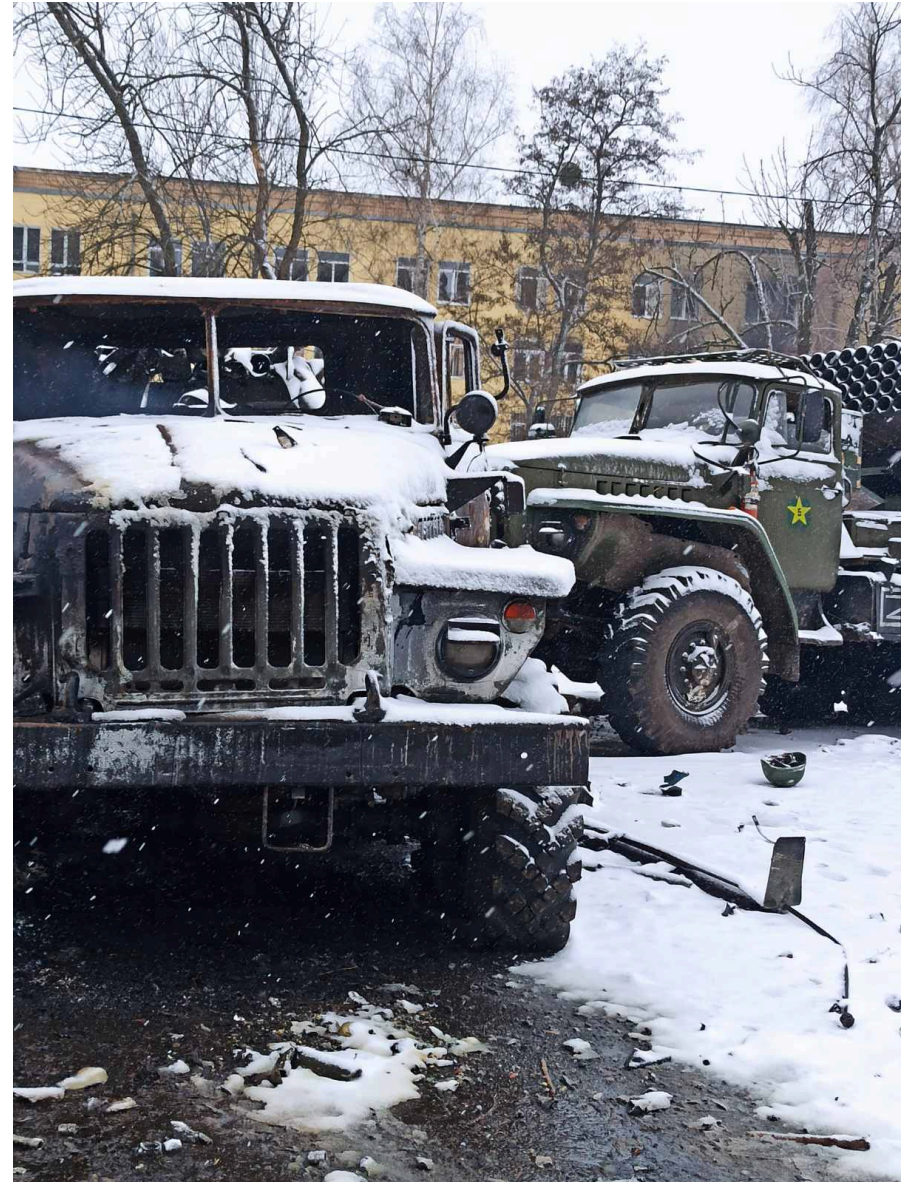
**Participants of French-Ukraine Winter School on HEP (March 2016)
at the entrance of the building of FTF V.N. Karazin National University**



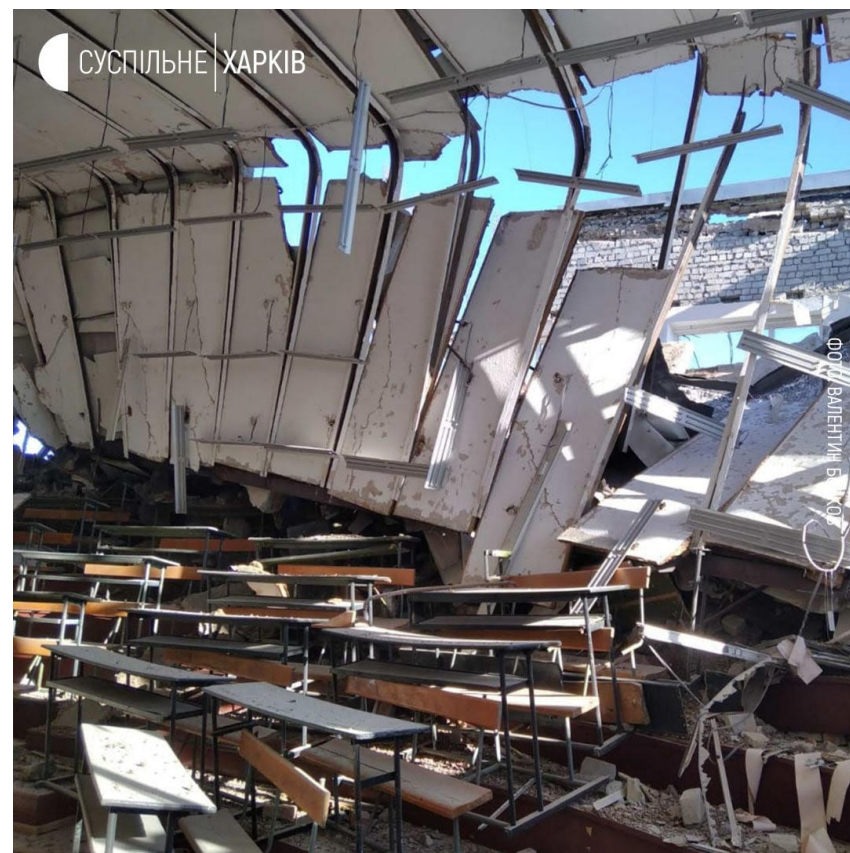
**Participants of French-Ukraine Winter School on HEP (March 2016)
at a lecture in the FTF building of V.N. Karazin National University**



**School of Physics and Technology
V.N. Karazin Kharkiv National University (February 25, 2022)**



School of Physics and Technology V.N. Karazin Kharkiv National University (March 2022)





IMPACT OF RUSSIAN INVASION OF UKRAINE

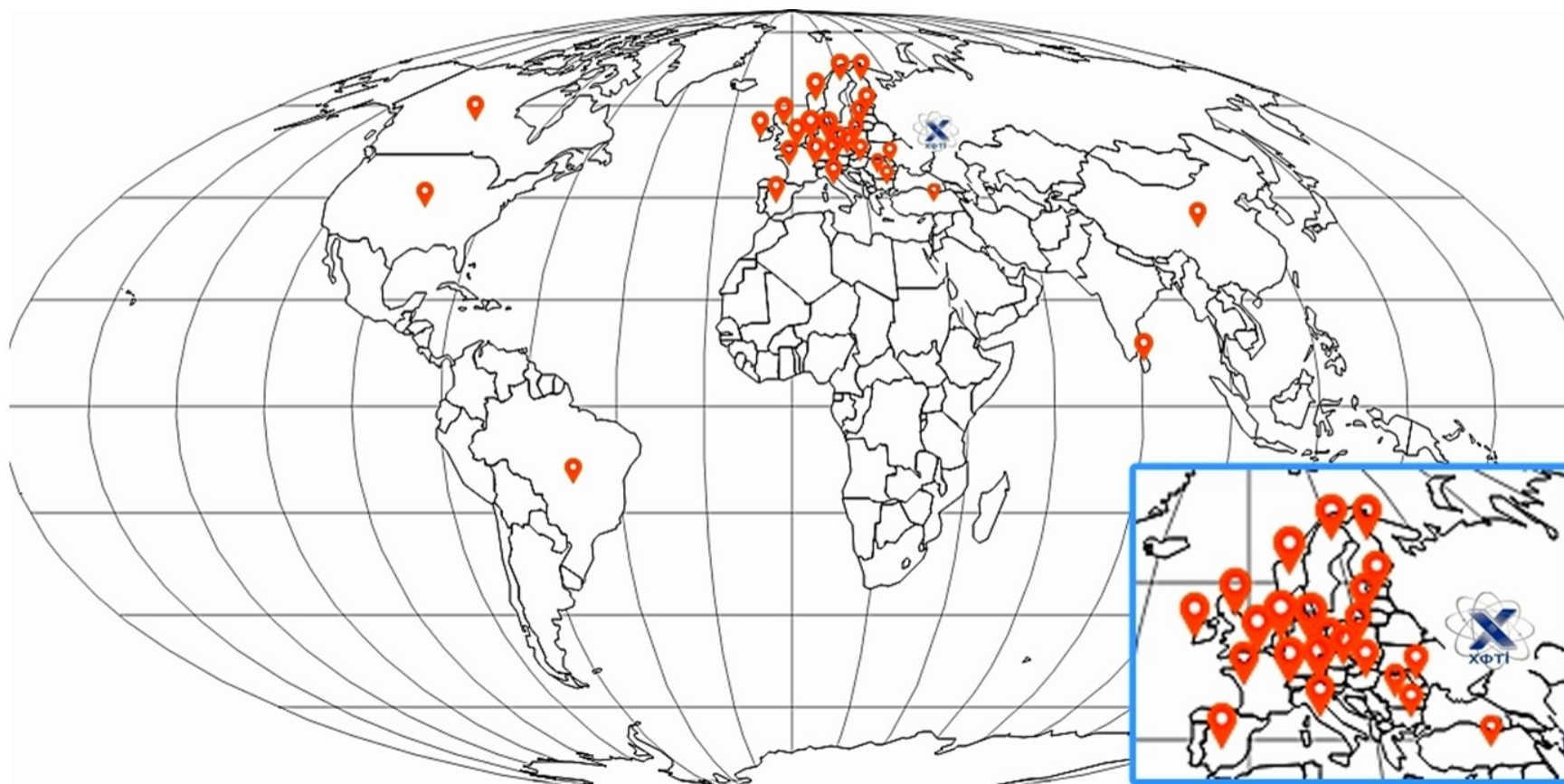


KIPT EMPLOYEES HAD TO DISPLACE WITHIN THE COUNTRY AND ABROAD



IMPACT OF RUSSIAN INVASION OF UKRAINE

30 COUNTRIES HAVE BEEN HOSTED KIPT EMPLOYEES



Radio-telescope UTR-2 of the Institute of Radio Astronomy (Kharkiv region)



As a result of hostilities with missile and bomb attacks at the scientific infrastructure of the NAS of Ukraine has suffered considerable losses and continues to be ruined.



Institute of Radio Astronomy (Kharkiv)



Usikov Institute for Radio Physics
and Electronics (Kharkiv)



Institute for Pulse
Processes (Mykolayiv)



Frantsevich Institute for Problems
of Materials Science (Kyiv)



Institute for Superhard Materials (Kyiv)

NSC “Kharkov Institute of Physics and Technology”

14,8 BILLION UAH ~ 0,4 BILLION EUR

Preliminary assessment of damage to KIPT
was implemented by
State Environmental Inspection of Ukraine





**THANK YOU VERY MUCH FOR YOUR ATTENTION
YOUR SUPPORT AND SOLIDARITY WITH UKRAINE**

