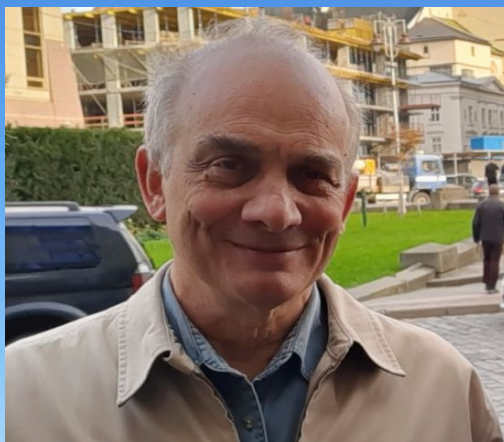


# EXPLORATION OF THE UNIVERSE AS A KEY TO THE DISCOVERY OF THE HUMAN SOUL. METHOD OF LEONID GURVITS

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Ukraine,*

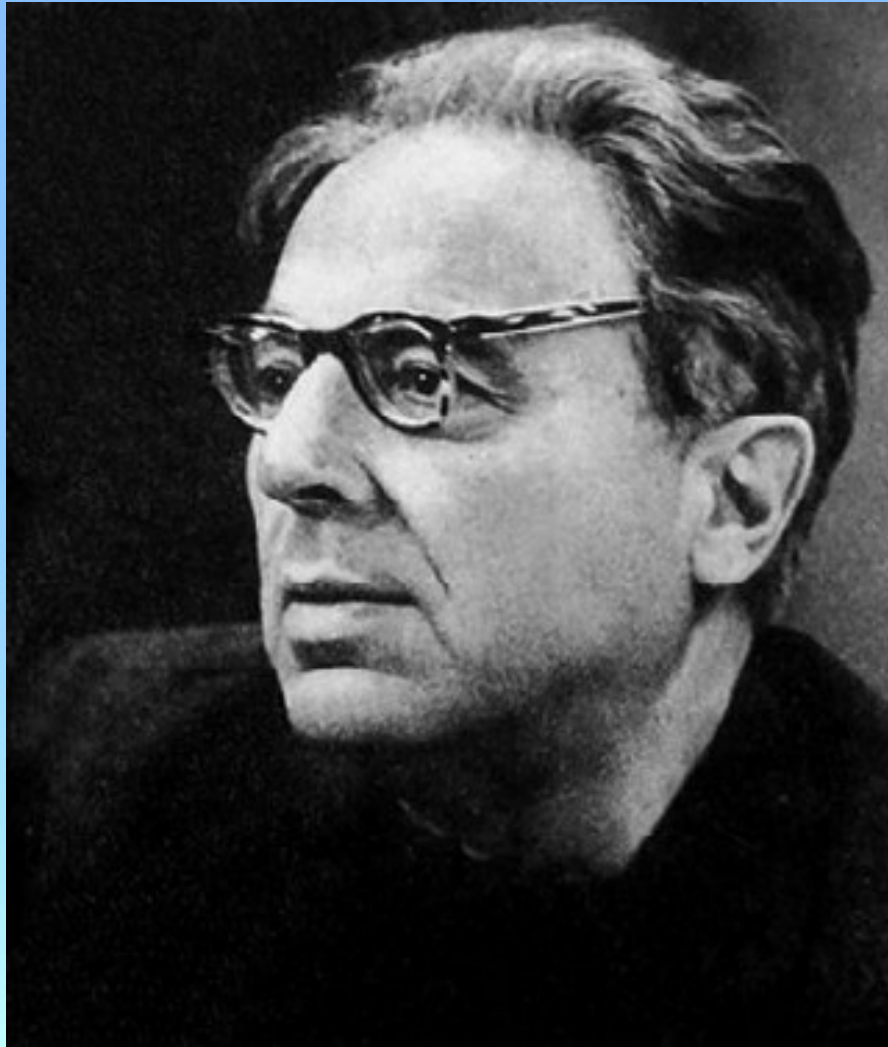
[akonov@rian.kharkov.ua](mailto:akonov@rian.kharkov.ua), [oulyanov@rian.kharkov.ua](mailto:oulyanov@rian.kharkov.ua), [zakhar@rian.kharkov.ua](mailto:zakhar@rian.kharkov.ua)



JIVE

Joint Institute for VLBI

18 Oct 2022



**Iosif Shklovsky**





# All - Wave Astronomy (2016)



## Shklovsky - 100



PhMI, NASU

SSAU

PGO, NASU,  
Poltava

Lviv



NSFCTC



Kharkiv

URAN-3



RT-32  
Zolochiv

Kyiv

805 km 910 km 946 km

Poltava

Kharkiv

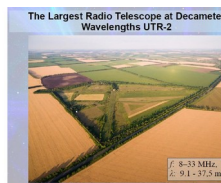
Poltava

URAN-1

GURT

UTR-2

URAN-1 42 km  
110 km 153 km  
URAN-2 UTR-2



The Largest Radio Telescope at Decimeter Wavelengths UTR-2

f: 8-33 MHz  
d: 91 x 37.5 m

U K R A I N E

495 km 613 km

Odesa



RT-70 Eupatoria

RT-22  
CRAO

IRA, NASU,  
Kharkiv

100 km

NASU, Kyiv



# Location of Radio Telescopes on the Ukraine Territory





**The world's largest UTR-2 radio telescope (N-S arm, 1.9 km x 60 m)  
Frequency range - 8... 32 MHz; number of elements - 2040;  
effective area - 150,000 square meters.**





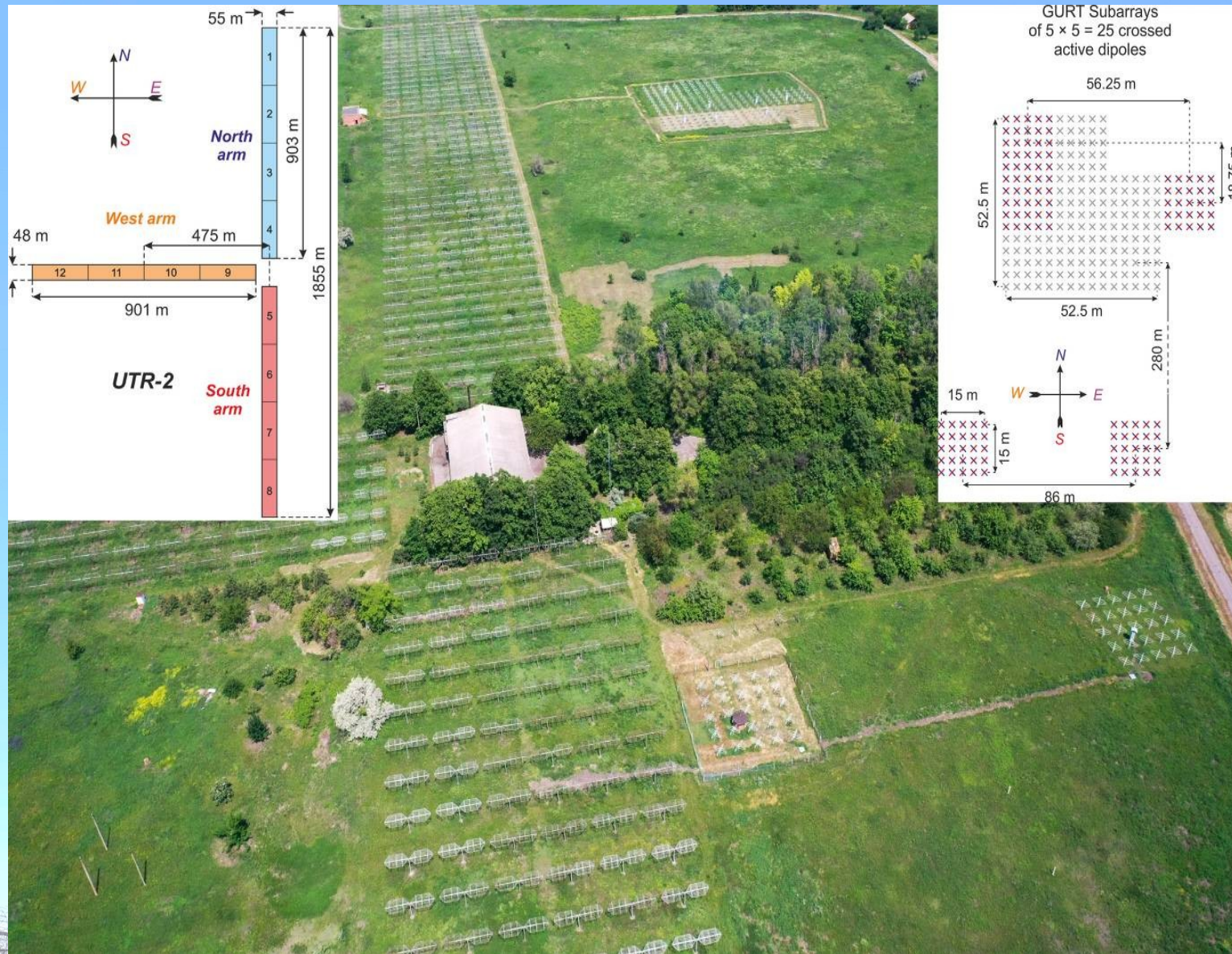


**The UTR-2 radio telescope, E-W arm (900m×60m)**





# Radio telescopes UTR-2 and GURT and their structural schemes





# North Arm of the Radio Telescope UTR-2 and RT GURT



**UTR-2**



**GURT**





## URAN-1...URAN-4 radio telescopes

$\Sigma N (\text{URAN}) = 1000 \cdot 2$ ;  $\Sigma N (\text{total}) = 4040$ ;  $A_{\text{eff}} (\text{total}) = 200000 \text{ sq. m}$

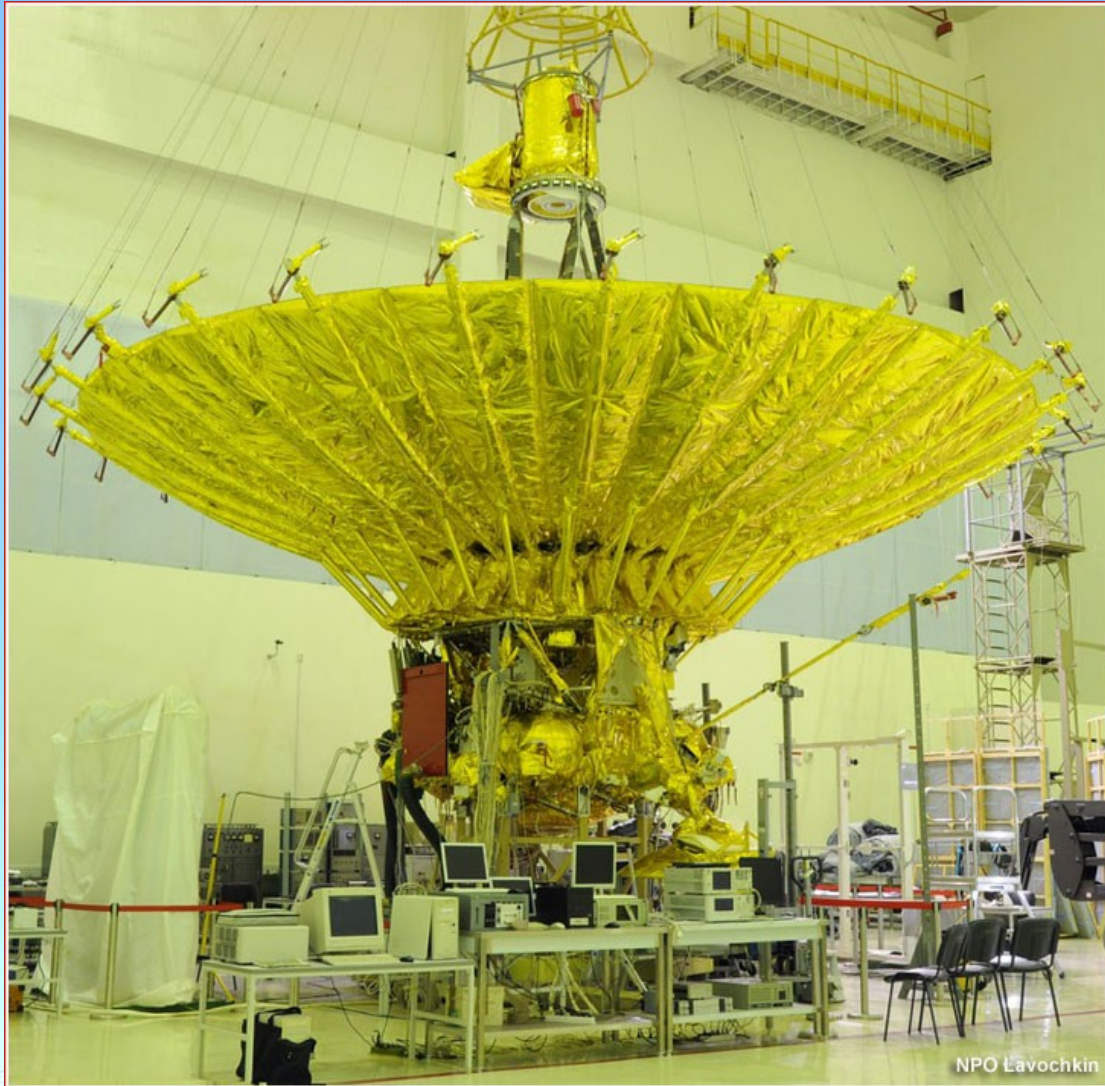


# RT-70 Evpatoria



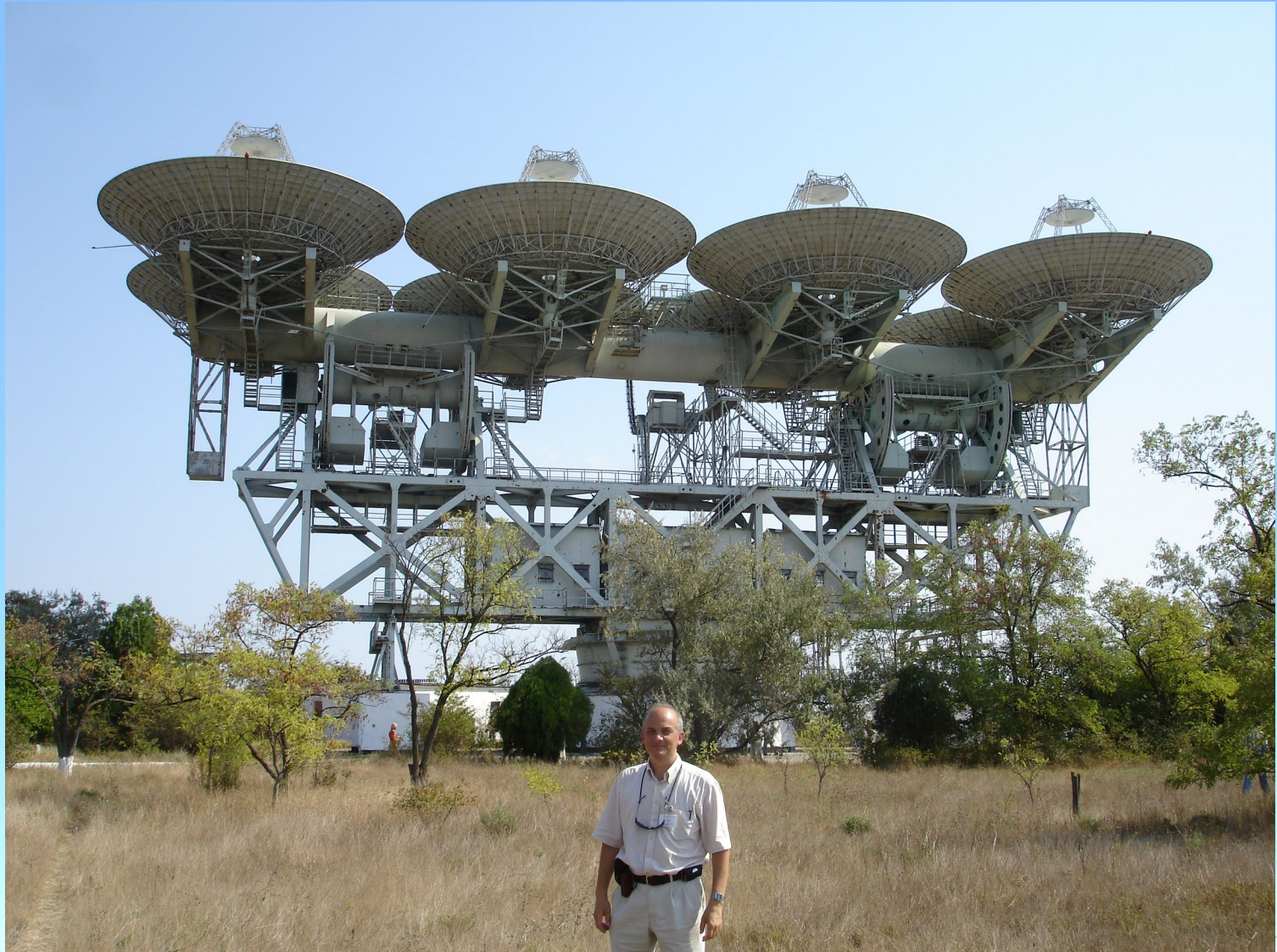


# Radio Astron





# Plutone Antenna System (Crimea)





# RT-22 Simeiz (Crimea)





# RT-32 Ventspils and RT-32 Zaozernoe (Evpatoria)





# Zolochiv (Ukraine) Oct 2021





# Old Friends (Lviv 2021)



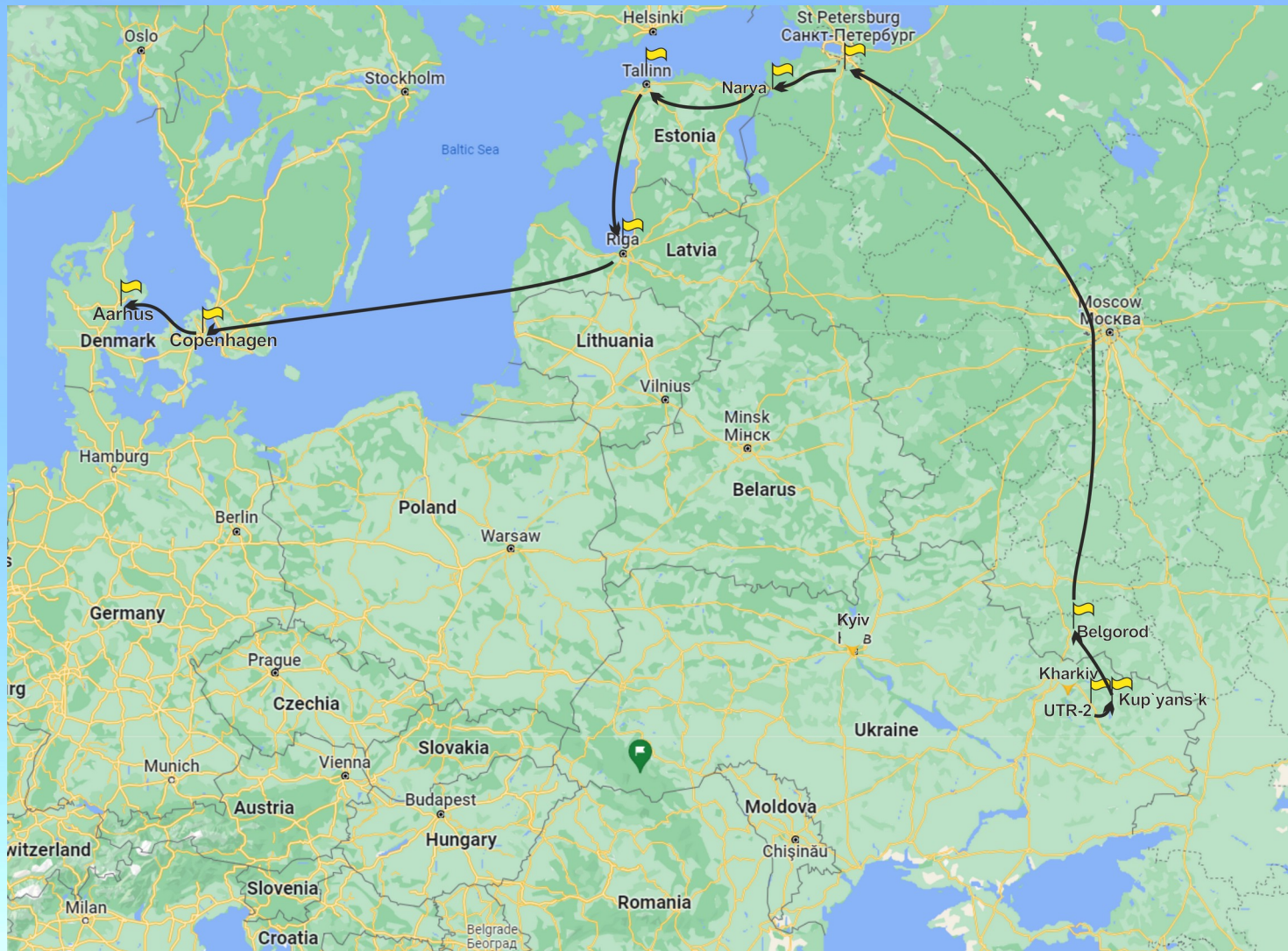


# Lviv 2021





# Long way to the freedom 2022...





## Equipment hole of UTR-2 before and after the occupation





# Conclusions

Thus, for about 40 years now we have the honor to know and respect Lyonya, which we are very proud of. It is difficult to list where, how many times and on what occasion the Aleksandr Konovalenko, Oleg Ulyanov and Vyacheslav Zakharenko met with Lyonya, discussed various scientific and life tasks, solved scientific and scientific-organizational problems. These were scientific seminars, workshops, international conferences, General assemblies of IAU, thesis defenses, discussions at the working or lunch table, and much more. The geography of these meetings is wide and varied also. These are the countries of the former Soviet Union and, practically the whole of Europe, a lot of radio astronomy observatories around the world. We must remember with gratitude Lyonya's constructive visits to radio astronomy observatories and telescopes in Ukraine. This is the world's largest Kharkov decameter radio telescope UTR-2 with GURT antennas, a radio interferometer system URAN with telescopes near Kharkov, Poltava, Odessa and Lviv. Of particular note is the Lyonya's contribution to the preparation and development for inclusion of radio telescopes RT-70 (Evpatoria, Crimea), RT-32 (Shkolnoye, Crimea), RT-22 (Simeiz, Crimea), as well as RT-32 (Zolochiv, Lviv's region) in to the EVN. The scientific community of Ukraine, have always highly appreciated and noted Lyonya's outstanding creative and scientific and organizational abilities in supporting the development of ground-based and space-based all-wave radio astronomy. He also contributed into the development of radio astronomy from hectometer up to millimeter wavelengths, the strengthening of international cooperation with the Netherlands and the integration of Ukrainian scientific institutions into the European scientific area.



# Thank You !







## Cooperation of Ukraine with the European Union countries in the field of astrophysics and radio astronomy



# Radio Telescope URAN-2

Poltava

**Low-frequency radio astronomy and production of meat and dairy products in two orthogonal polarizations**

