



# Ukrainian Astronomical Association

Astronomy in Europe: An Evolving Collaboration

Leiden, 20-24 January 2008

# **Status of the Ukrainian Astronomical Society (UAA)**

- **UAA was founded in 1991. Since this year the UAA coordinates the astronomical activity in Ukraine.**
- **The UAA consists of 15 Institutional Members & dozens of Individual Members.**
- **The UAA is served as the National Committee of astronomers in Ukraine. There are more than 1500 persons in Ukraine involved in astronomical researches.**

# UKRAINE

24° E

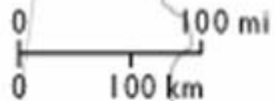
28° E

32° E

36° E

40° E

52° N



BELARUS

RUSSIA

POLAND

SLOVAKIA

HUNGARY

ROMANIA

SERB. &  
MONT.

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L'viv

Kiev

Kharkiv

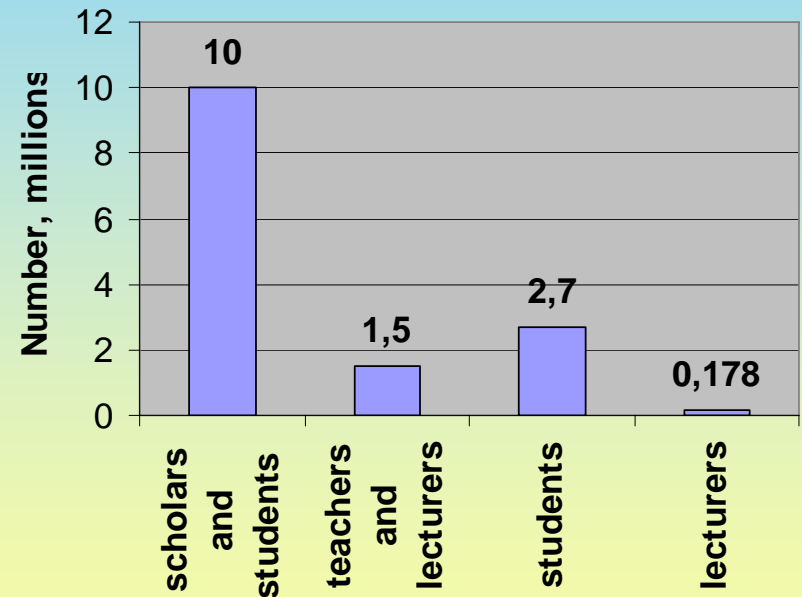
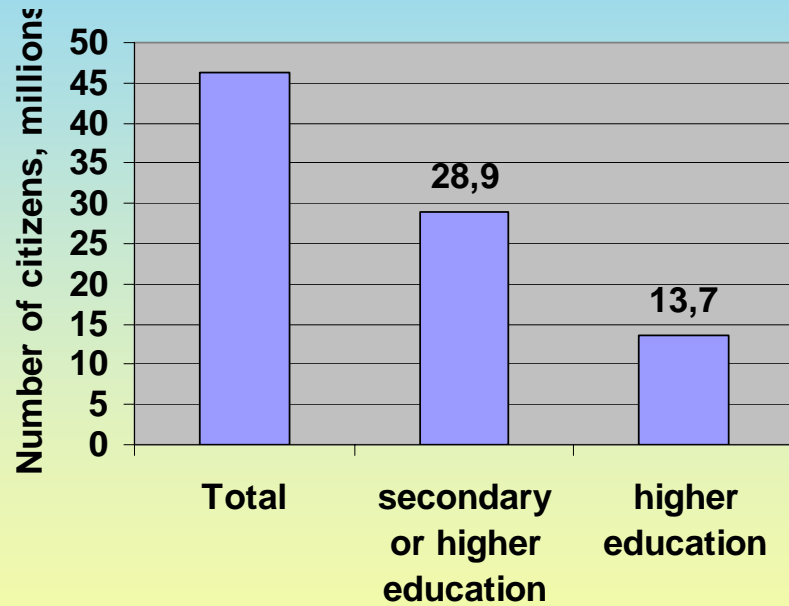
Odesa

Simferopol'

RUSSIA



# Education in Ukraine

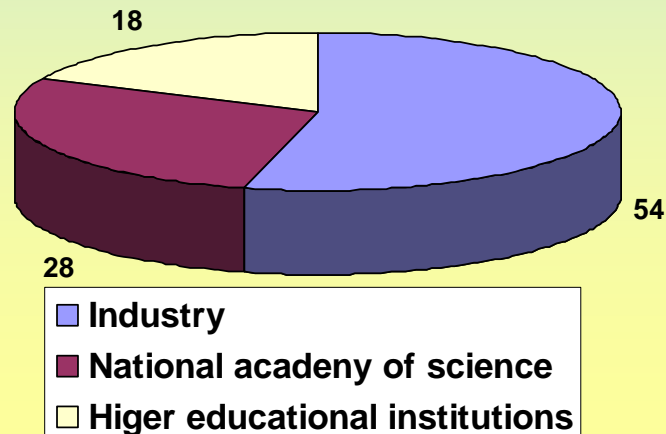


# Science in Ukraine

There are three governmental structures which are responsible for development of science & technology:

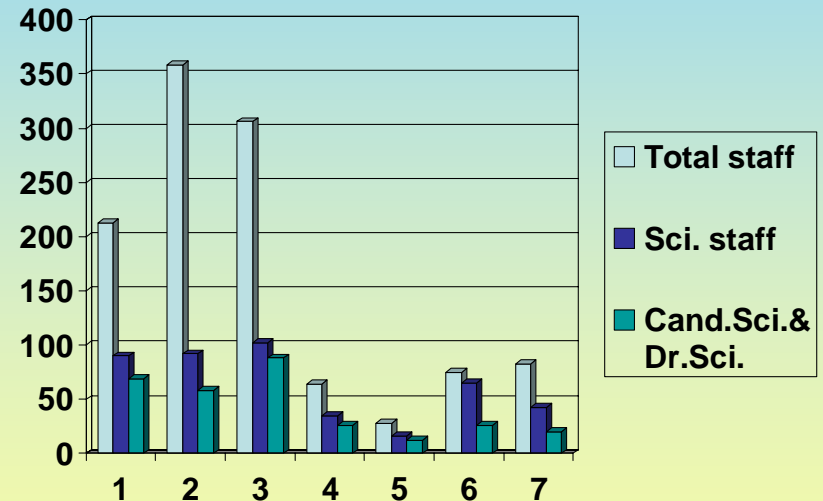
- the National Academy of Sciences of Ukraine (NASU)
- the Ministry of Industrial Policy (MIP)
- the Ministry for Education and Science (MES)

Number of employees (%) →



# The Most Important Astronomical Institutions

1. Main Astronomical Observatory of the NASU (Kiev)
2. Crimean Astrophysical Observatory of the MESU
3. Institute of Radio Astronomy of the NASU (Kharkiv)
4. Astronomical Observatory of the Kyiv National University
5. Astronomical Observatory of the L'viv National University
6. Astronomical Observatory of the Odessa National University
7. Institute of Astronomy of the Kharkiv National University
8. International Center for Astronomical & Medical-Ecological Research (ICAMER), North Caucasus, Russia



# **Activities of the Society**

# **Links with Government:**

**Expert`s opinion on Projects of**

- **the National Academy of Sciences of Ukraine**
- **the Ministry of Industrial Policy**
- **the Ministry for Education and Science**
- **Interbranch scientific & engineering technology Projects**

# **Publicly funded observatory:**

**Ahdrushivka observatory**



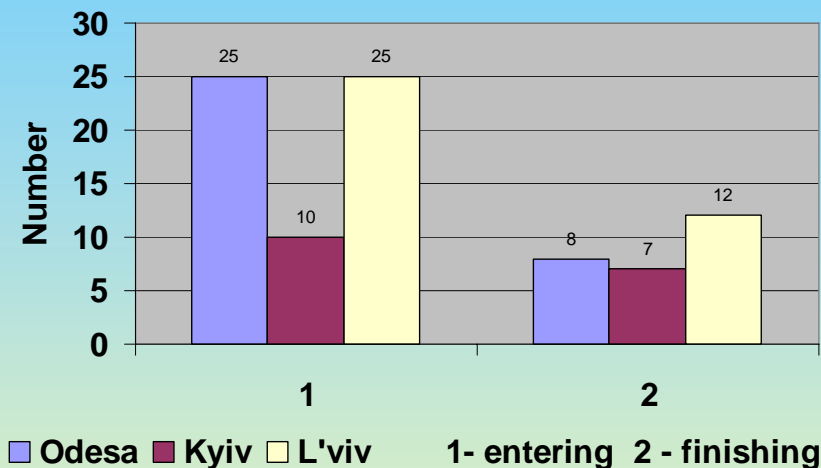
# Meetings in Ukraine

- ◆ **UAA Meetings**
- ◆ **International Summer School (Odessa, annual event)**
- ◆ **Gamov Memorial International Conference (Odessa, annual event)**
- ◆ **International conference CAMMAC (Vinnytsya, 1999, 2002, 2005 )**
- ◆ **Annual International conference “Solar physics” (Crimean Astrophysical Observatory)**
- ◆ **Babij Memorial Conference (Lviv)**
- ◆ **Annual International conference “Relativistic Astrophysics, Gravitation and Cosmology (AO Kyiv Shevchenko National University)**
- ◆ **Annual Conference on Astronomy and Space Physics (Kyiv Shevchenko National University)**
- ◆ **Annual Young Astronomer’s School (National Aviation University)**
- ◆ **Astronomical Education (Kyiv National Pedagogical University)**
- ◆ **Vsechsvyatsky Memorial International Conference (Kyiv Shevchenko National University)**
- ◆ **International Scientific Conference dedicated to the 185th anniversary of Nikolaev Astronomical Observatory**
- ◆ **International Historical Conference dedicated to the 110 anniversary of O.Struve**
- ◆ **International Scientific Conference dedicated to the 100 anniversary of V. Tsesevich**
- ◆ **International Scientific Conference dedicated to the 100 anniversary of O. Bogorodsky**
- ◆ **Historical Conference dedicated to the 100 anniversary of S. Korolov**

# **Job Market**

# The most important national universities which have astronomy and space related faculties:

1. National University of Kyiv
2. National University of Kharkiv
3. National University of Odesa
4. National University of L'viv
5. National Technical University "Kyiv Polytechnical Institute"
6. National University of Dnipropetrovsk
7. V.I. Vernadsky Taurian National University in Simferopol
8. National University of Uzhgorod
9. Zhukovsky National Aerospace University in Kharkiv



- ➔ 50% of students, who finished their education, continue to work in astronomy
- ➔ 30% of holders of a Specialist's diploma or Master's Degree defend a Candidate Thesis within 3 - 7 years after they graduate
- ➔ 60% of the entering students finish their education in 5 years

<b>Pedagogical Universities</b>	<b>Specialization</b>	<b>Entering students</b>	<b>Total students</b>
<b>Kyiv National Pedagogical University</b>	<b>“Physics &amp; Astronomy”</b>	<b>50</b>	<b>~200</b>
<b>Mykolaiv Pedagogical University</b>	<b>“Physics &amp; Astronomy”</b>	<b>25</b>	<b>~100</b>

# Secondary Astronomical Education

From 1992 till 2000 astronomy was excluded from the secondary education basic curriculum. In 2000, as a result of persistent activity by the Ukrainian Astronomical Association and numerous round-tables with representatives of ministry departments, this regrettable decision was corrected and astronomy was reinstated into the current 12-year secondary education curriculum.

- ◆ **Some elements of the astronomical discipline are included in the standard “Natural Science” curriculum of the 6th -11th grades**
- ◆ **“Astronomy” is a required course in general (non-specialized) schools (17 academic hours in the last 12th grade) & in lyceums of the natural sciences (34 academic hours in the 12th grade)**
- ◆ **“Astronomy” as an elective course is studied in gymnasiums of the humanities**

## **Public outreach**

- ◆ **Members of Ukrainian Astronomical Association act in newspapers, magazines and on TV and radio.**
- ◆ **There several astronomical museums operated at observatories and open for public.**
- ◆ **With UAA assistance popular films on famous astronomers & observatories are produced.**
- ◆ **Several planetariums are opened to the public. The largest of them are placed in Kiev and Kharkiv.**

# Publications

◆ **Information Bulletin of the Ukrainian Astronomical Association**

◆ **Astronomical Calendar (annual)**

◆ **Odesa Astronomical Calendar (annual)**

◆ **Schooler Astronomical Calendar (annual)**

◆ **Textbooks of astronomy for students:**

**Celestial Mechanics, Physics of Planetary atmospheres, Solar physics,**

◆ **Magazines: Svitoglyad ("World view"), Vselennaya, Prostranstvo, Vremya ("Universe .Space. Time.")**

◆ **Books on History of Astronomy**



# Grants and prizes

## ◆ Prize of Ukrainian Astronomical Association

“For outstanding achievements in development of Ukrainian astronomy”

## ◆ Drogobych Prize of Ukrainian Astronomical Association for young scientists

Ukrainian Astronomical Association is sponsoring young scientists for participation in scientific meetings.

# **Links of the Society with Sister Societies**

- ◆ **Euro-Asian Astronomical Society (Russia)**
- ◆ **the Odessa Astronomical Society**
- ◆ **the Ukrainian Society for Gravity, Relativistic Astrophysics and Cosmology**
- ◆ **the Ukrainian Societies of Amateur Astronomy**

# **Links of the Society with International Organizations**

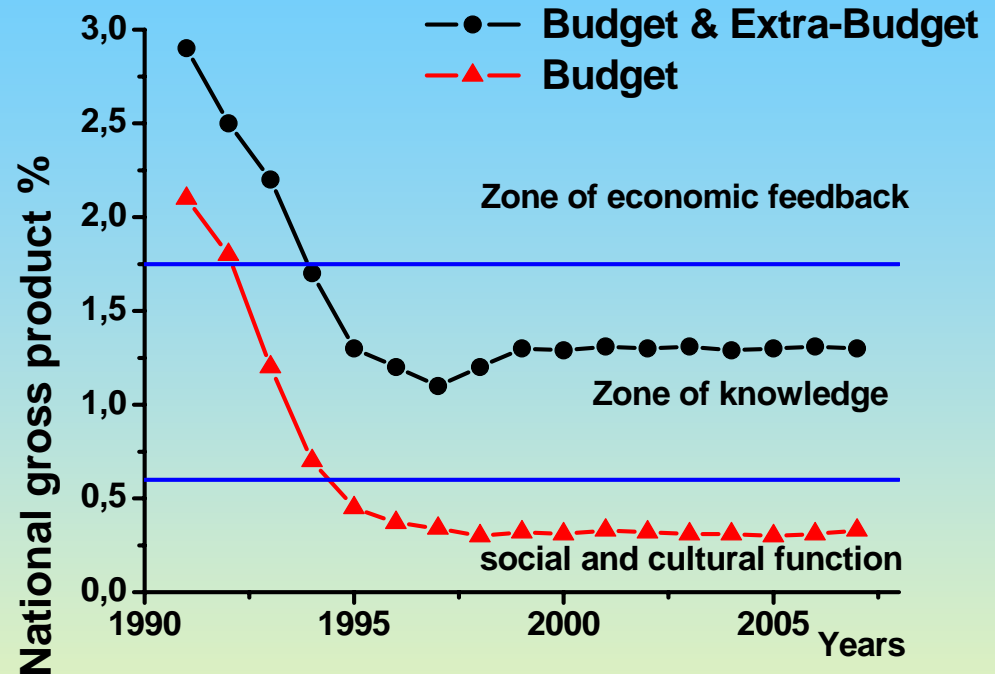
- ◆ **UAA serves as the National Committee of the International Astronomical Union. There are more than 100 IAU members in Ukraine**
- ◆ **UAA cooperates with international organizations: COSPAR, “International night sky”, UNESCO.**

# Problems

# Science funding is worse

Beginning in 1991, the total expenditure (budgetary and off-budgetary) for research and development (R&D) has been reduced by factor of 10.

Science in Ukraine, including astronomical researches, is now facing a difficult time due to economic limitations of the nation and the need for upgrading the existing scientific infrastructure.



## Prestige

The need to raise the prestige of the scientific profession irrespective of the low salaries for young scientists and engineers.

## Secondary astronomical education

How to increase the number of new textbooks ?

How to organize regular training of astronomy teachers ?

# **SCIENTIFIC DEGREES AND SCIENTIFIC CAREERS OF ASTRONOMERS**

The system of Bachelor and Master's degrees was initiated in 2002. The system of higher scientific degrees in Ukraine is inherited from the Soviet type system and consists of two levels:

- Candidate of Science &
- Doctor of Science.

The first level degree of Candidate of Sciences (Cand. Sci.) is the analogue of the degree of Doctor of Philosophy or Doctor of Medicine adopted in Europe and other countries.

The second level degree of Doctor of Science (Dr. Sci.) corresponds the higher scientific level.

The Degrees of Cand.Sci. and Dr.Sci. for those who work in astronomy are related to such fields as the Physics-Mathematical Sciences and Technical Sciences.

# Strategic planning for 2004-2011

## Priorities of Ukrainian astronomy:

- **Physics & Kinematics of Solar system small bodies**
- **Global characteristics of the Sn & Sun-like-stars**
- **Solar-planetary interactions**
- **Formation & evolution of stars**
- **Formation & evolution of galaxies**
- **Observational & theoretical cosmology**
- **Ground-based support of space missions**

# Short-term investment priorities

The main attention will be paid to the upgrade astronomical facilities which are part of international networks or are involved in international programs:

- RT-22 radio telescope
- Optical 2.6 m telescope
- UTR-2 decameter telescope
- Ground-based networks of small-size and medium-size telescopes which will be involved in studying of
- Gravitational microlensing
- Ultra-rapid stellar variability
- Magnetic activity of the Sun
- Pulsating stars, red dwarf flare stars etc.



# **Medium term investment priorities**

**Participation in space missions**