UN Workshop on
Space Technology Applications for Socio-Economic Benefits
September, 14 – 17, 2010

General Panorama
on
Astronomy and Space Sciences in Turkey

Zeki EKER
TÜBİTAK National Observatory

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Astronomy and Space Sciences Departments

İstanbul University (İstanbul, 1936)
Ankara University (Ankara, 1954)
Ege University (İzmir, 1963)
Erciyes University (Kayseri, 2003)

4 departments.
Physics Departments with Astronomy & Astrophysics

Canakkale 18 Mart University (Çanakkale, 1992)
Middle East Technical University (Ankara, 1956)
Atatürk University (Erzurum, 1957)
Boğaziçi University (İstanbul, 1971)
Çukurova University (Adana, 1973)
İnönü University (Malatya, 1975)
Akdeniz University (Antalya, 1982)
Kültür University (İstanbul, 1997)
Sabancı University (İstanbul, 1999)

9 within the Physics Departments
Space Sciences and Technologies Departments
Çanakkale 18 Mart University (Çanakkale, 2010)
Akdeniz University (Antalya, 2010)
Astronomy and Space Sciences Departments

İstanbul University (since 1936)

Faculty Staff: 15 with PhD, 3 RA, 13 PhD students, 19 Msc students.

Main Interests: Variable stars, galactic structure and multicolour photometry, the sun, stellar atmospheres and high energy astrophysics.
Ankara University (since 1954)

Faculty Staff: 7 with PhD, 11 RA, 8 PhD students, 22 Msc students.

Main Interests: Light and period variations in close binary systems, variable stars, chemical abundances, exoplanets.
Ege University (since 1963)

Faculty Staff: 18 with PhD, 3 RA with PhD, 1 RA dissertation, 8 PhD, 13 Msc

Main Interests: Close binaries, delta scuti and beta cephei type stars, pulsating white dwarfs, stellar clusters, activities in stars. Galactic structure and Cosmology.
Erciyes University (since 2003)

Faculty Staff: 4 with PhD, 3 RA (2 dissertation, 1 MSc student), 9 Msc students.

Main Interests: Variable stars, radio telescopes and radio observations.
PHYSICS DEPARTMENTS
WITH ASTRONOMY & ASTROPHYSICS
Physics Departments with Astronomy & Astrophysics

Çanakkale 18 Mart University (since 1992)

Faculty Staff: 11 with PhD,
   10 PhD students, 10 Msc students
Main Interests: Stellar structure and evolution, close binaries, binary evolution, high energy astrophysics, cosmology.

Middle East Technical University (since 1956)

Faculty Staff: 8 with PhD,
   3 Phd students, 6 Msc students
Main Interests: Stellar structure and evolution, cataclysmic variables, high energy astrophysics, Be stars, cosmology.

Kültür University (since 1997)

Faculty Staff: 7 with PhD
Main Interests: Theoretical and observational studies
Boğaziçi University (since 1971)
Faculty Staff: 4 with PhD, 7 researchers in The Kandilli Observatory
Main Interests: Solar observations, Galactix X-rays, X-ray pulsars, LMX-ray binaries, Galaxy clusters

Sabancı University (since 1999)
Faculty Staff: 4 with PhD, 7 PhD students.
Main Interests: High energy astrophysics, compact objects: neutron stars, gamma-ray bursts (observations), black holes (observations), white dwarfs (observations)

Akdeniz University (since 1993)
Faculty Staff: 4 with PhD, 2 PhD students, 1 Msc.
Main Interests: Activities in stars, solar observations, SN Remnants, x-ray and gamma ray astronomy, Cosmology
Physics Departments with Astronomy Studies

Çukurova University (since 1973)
Faculty Staff: 2 with PhD, 4 PhD students, 1 Msc student.
Main Interests: Optical astronomy, gamma-ray astronomy, IS space, binary stars

Inönü University (since 1990)
Faculty Staff: 1 with PhD, 1 RA (dissertation)
Main Interests: Optical astronomy, Semi-regular, long period variables

Atatürk University (2007)
Staff: 1 researchers with PhD, 2 Msc students
Main Interests: Observational astronomy
Çanakkale 18 Mart University

This is a newly established department....
A few researchers, no students yet...

Akdeniz University

This is a newly established department....
A few researchers, no students yet...

Busy with curriculum development
OBSERVATORIES
Observatories

İstanbul University Observatory

Telescopes: 7, 12, 13 cm refractors for solar (white light and Hα) observations, a 30 cm refractor-astrograph for stellar observations which is not in use due to light pollution and a 30 cm telescope for students.
Observatories

Boğaziçi University
Kandilli Observatory and Earthquake Research Institute

Telescopes: 12.5, 16 and 20 cm refractors for solar [CaK (393.3 nm), Hα(656.3 nm), Na(589.0nm), He(1083.0 nm)] observations.
Observatories

Ankara University Observatory

Telescopes: 12.5, 15, 30, 35 and 40 cm telescopes for photometric observations of stars and solar observations.
Observatories

Ege University Observatory

Telescopes: 13, 15, 30, 40, 48 cm telescopes for photometric observations of stars.
Observatories

Erciyes University Radio Observatory

Telescopes: One 13 m and five 5 m radio telescopes. Small optic telescopes of 30-40 cm.
Observatories

Çanakkale 18 Mart University Observatory

Telescopes: 20, 30, 40 and 122 cm telescopes.
TUG  (TUBITAK National Observatory)

TÜBİTAK National Observatory
(Scientific and Technological Research Council of Turkey)

Location: South of Turkey, on TAURUS Mountains
(Latitude: 36° 49′ 27″ N, Longitude: 30° 20′ 08″ E)

Elevation: 2500 m

www.tug.tubitak.gov.tr
TUG (TUBITAK National Observatory)

www.tug.tubitak.gov.tr
Location

Bakırlitepe, Saklıkent

Latitude: 36° 49' 27" N
Longitude: 30° 20' 08" E
Height: 2500 m.

Observatory Site, Bakırlitepe, Saklıkent
SITE CHARACTERISTICS at PRESENT

**Nighttime Seeing**
- **Seeing distribution at RTT150**
  
  Median Seeing = 1.45"

- **TUG-DIMM**
  
  Zenith corrected values
  
  Median Seeing = 0.81"
  
  \[q_l=0.67", q_u=1.03"\]

**Daytime Seeing**

- **TUG-SDIMM**
  
  Day-time Fried Parameters
  
  Median = 4.45 cm
  
  \[q_l=3.18 cm, q_u=6.28 cm\]
HOW TO REACH? Winter

Saklikent – TUG: 1400 m. teleski line
SUMMER - WINTER

Summer Records: -28°C temp., 5 m. snow level, 257 km/h wind speed...

Winter Records: -28°C temp., 5 m. snow level, 257 km/h wind speed...
RTT150 (Russian Turkish Telescope)

A coude/cassegrain RC telescope.

Diameter: 150 cm

Instruments:
(1) Coude spectrograph, (2) Faint object spectrograph and camera (TFOSC), (3) fast ccd camera, (4) Dual Ethalone Fabry-Perot Optical Spectrometer (DEFPOS)

Operated in time sharing Basis:
40 % TR
45 % KSU
15 % IKI (Russian Academy of Sciences)
RTT150 INSTRUMENTS: Echelle Spectrometer (Coudé)

Optic path: 72 m
Spatial resolution: 3”/mm
Resolution: 40000 and 100000
CCD Camera: Andor DW 436 (2048x2048)
Spectral Coverage: 3900 – 8700 Å
Spectral Resolution: 0.13 – 0.25 Å
Orders: 68
Solar Corona spectrum during the total eclipse on March 29, 2006
RTT150 + Coudé echelle spectrometer, UT = 10:55:44
T100

A RC telescope established in 2009. (ready to accept proposals)

**Diameter:** 100 cm

**Instruments:**
Spectral Instruments
4kx4k 1100 series ccd
Camera with Fairchild 486 BI CCD

Mostly will be dedicated to extended objects
Galaxies, Galaxi Clusters, Star clusters. Solar System Objects, NEO, etc.
TELESCOPES: T100

Optic class: RC
Aperture: 100 cm
f ratio: f/10

CCD Camera
SI 1100 UV, BI
(4096x4096, 15 µ)
fov: 21.5x21.5 arcmin

Filters
Bessell UBVRI, SDSS
Hα, Hβ, SII, OII, Call K
(50x50 mm, 2 wheels, 16 pos.)
T60
A robotic RC telescope (Newly established)
Diameter: 60 cm
Instruments: Fairchild CCD 3041-UV 2kx2k CCD Camera
Dedicated to long period variable stars
TELESCOPES: **T60 (Robotic)**

- **Optic class:** RC
- **Aperture:** 60 cm
- **f ratio:** f/10

**CCD Camera**
- FLI ProLine 3041 UV, BI
- (2048x2048, 15 µ)
- **fov:** 17.6x17.6 arcmin

**Filters**
- Bessell UBVRI and SDSS
- (50 mm dia. 12 pos.)
TELESCOPES: ROTSEIIId

Robotic Optical Transient Search Experiment

PROTOCOL: TUG and University of Michigan (ABD)
TIME SHARING: %30 TUG, %70 ROTSE network

Optic class: Cassegrain
Aperture: 45 cm
f ratio: 1.8

CCD Camera
Marconi E2V, 13.5 mic
(2k x 2k)
Mission

Provide telescope time and facilities for Turkish universities and research institutes for their astronomical and astrophysical research projects. Also supporting scientific meetings, astronomy education in schools, to give public lectures and activities for schools and the general public.
TÜBİTAK National Observatory

• Allocate observing time (scientific proposals)
  Serving about 250 Spc. scientists, 130 of them PhD holders.
  4 Astronomy and Space Science Depts
  9 Physics Depts,
  2 Space Science & technology
• Scientific meetings, workshops, Summer/winter schools
• Public activities.
BUILDINGS: Accommodation

Nine rooms (20 guests)

Two rooms (6 guests)

Saklıkent Hotel (60 guests)
BUILDINGS: Guest House
OBSCOS09
16-18 Kasım 2009, Saklıkent, ANTALYA

- Cosmic Microwave Background
- Large Scale Structure
- Supernova Cosmology
- Gravitational Lensing
- Dark Matter – Dark Energy
- Early Universe

Eric Gawiser (Rutgers University, USA)
Will Percival (Univ. Of Portsmouth, UK)
Dragan Huterer (Univ. Of Michigan, USA)
TÜBİTAK ULUSAL GOZLEMEVİ
Lisans Öğrencileri Yaz Programı

2008 yılı dönemleri
I. 25-29 Haziran
II. 07-11 Temmuz
III. 21-27 Temmuz
IV. 04-10 Ağustos
V. 18-24 Ağustos
VI. 01-07 Eylül

www.tug.tubitak.gov.tr/tug_loyp
Son başvuru tarihi: 30 Mayıs 2008
Science and Community
Telescope Experts Training Project
2010 – 2013
Budget ~ 1,2 Million USD
2 Mechanical, 2 Opto-mechanical, 2 Electric-Electronic,
2 Software Engineers
(Cooperation with ESO)

2,5 - 3,5 m. Optical Telescope Project
2012 – 2015
Thanks...