

# Gözlemevleri: Evrene Açılan Pencereleer



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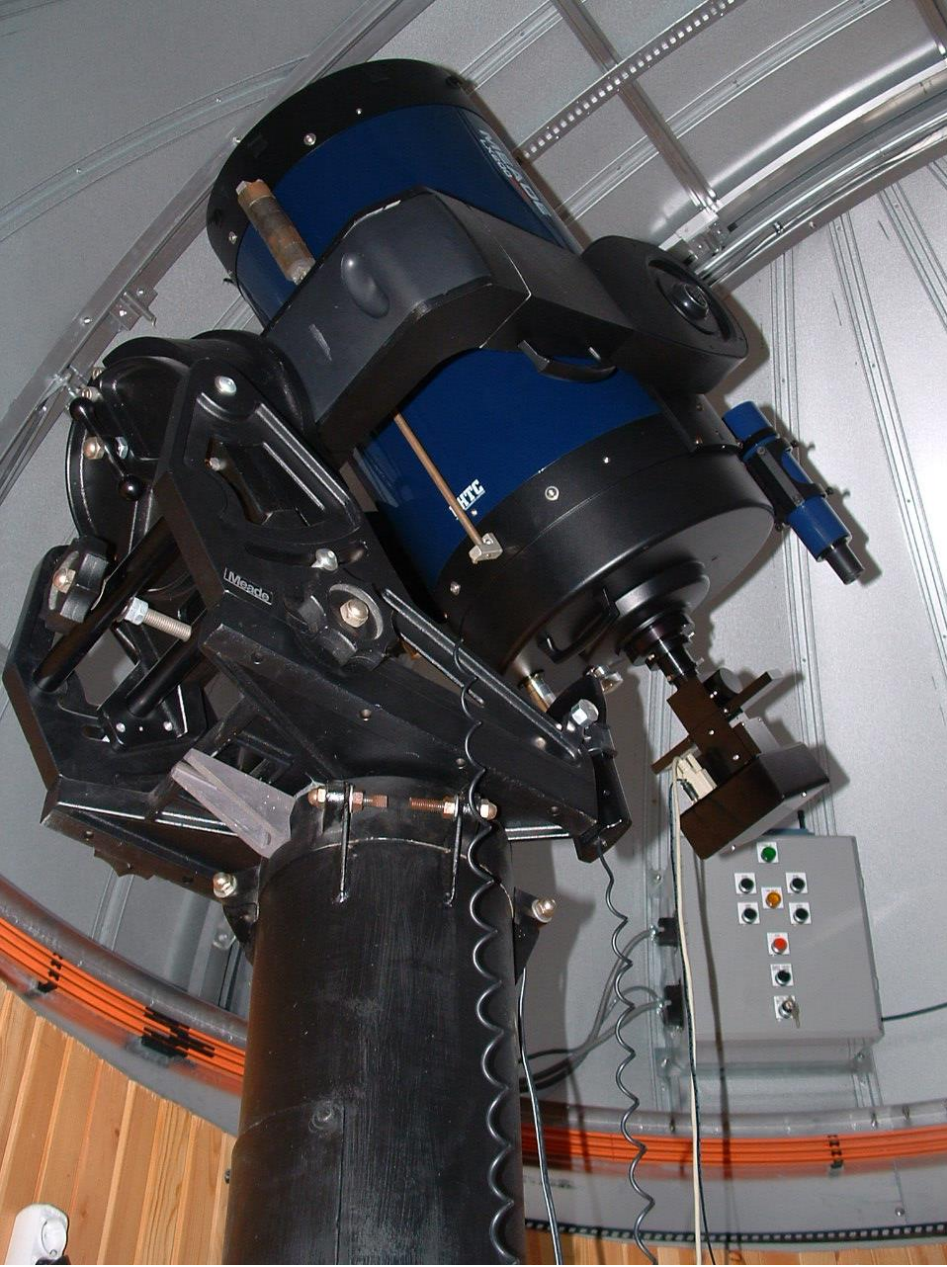


# EGE ÜNİVERSİTESİ GÖZLEMEVİ-1965











15/07/2004

























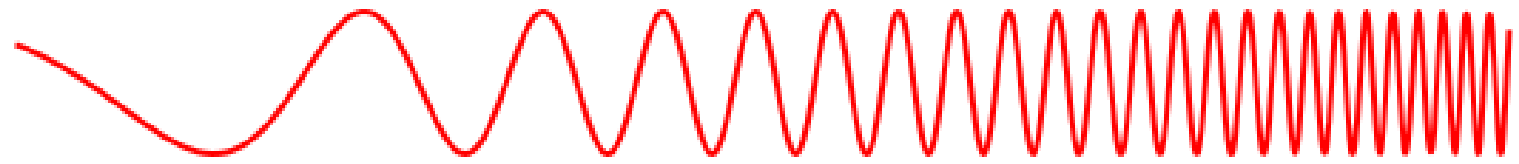








Dünya'nın atmosferinden geçebilir mi?



Işınım Tipi  
Dalgaboyu (m)

**Radyo**

$10^3$

**Mikrodalga**

$10^{-2}$

**Kızılötesi**

$10^{-5}$

**Görünür ışık**

$0.5 \times 10^{-6}$

**Morötesi**

$10^{-8}$

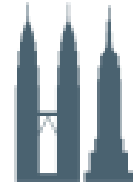
**X ışını**

$10^{-10}$

**Gama ışını**

$10^{-12}$

Dalgaboyunun yaklaşık ölçüğü



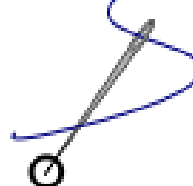
Binalar



İnsanlar



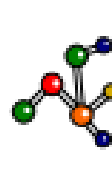
Kelebekler



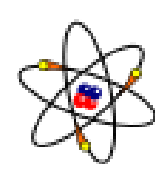
İğne ucu



Tek hücreliler



Moleküller

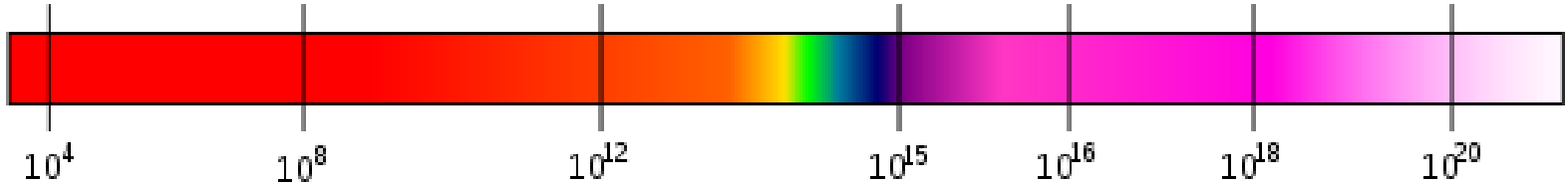


Atomlar



Atom çekirdeği

Frekans (Hz)



$10^4$

$10^8$

$10^{12}$

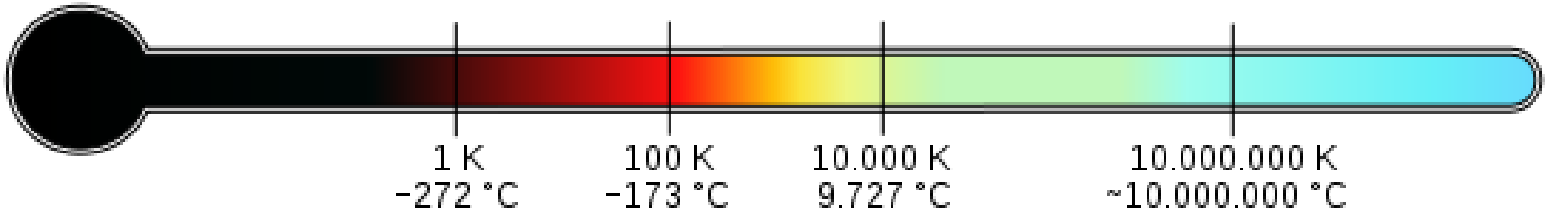
$10^{15}$

$10^{16}$

$10^{18}$

$10^{20}$

En yoğun bu dalgaboyunda ışınım yapan cisimlerin sıcaklığı



1 K

-272 °C

100 K

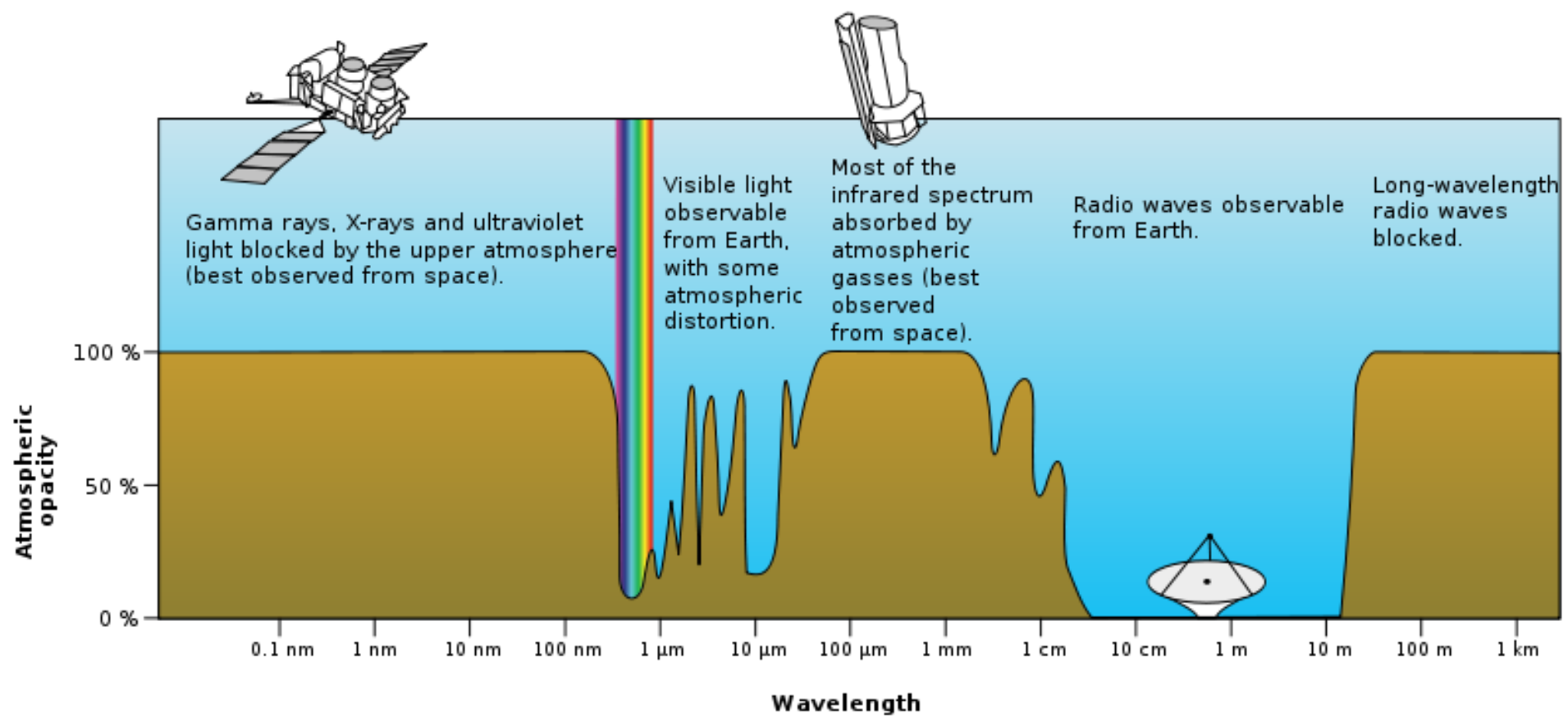
-173 °C

10.000 K

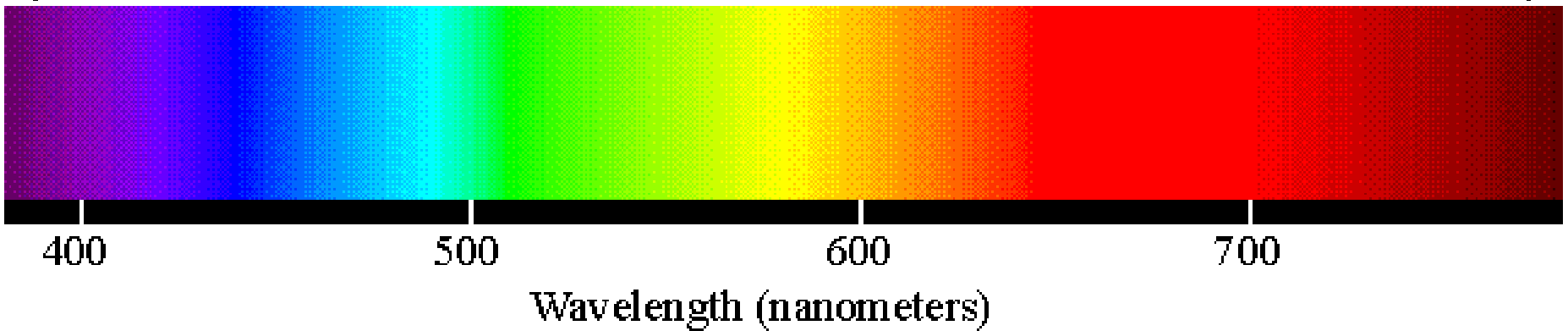
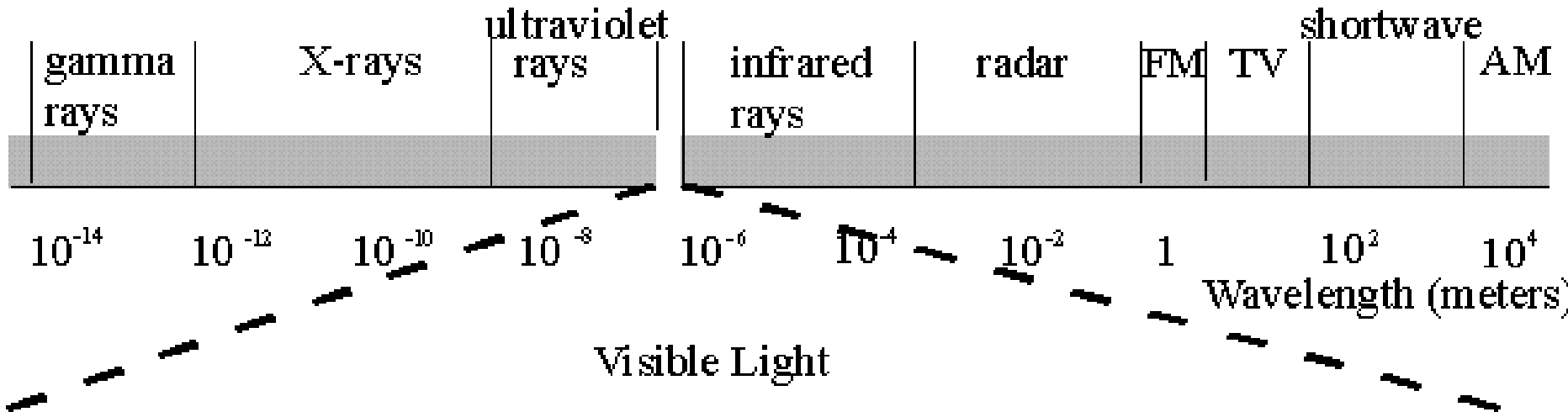
9.727 °C

10.000.000 K

~10.000.000 °C







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[Visual Stimulus](#)

# Stonehenge-İngiltere, 5000 yıllık





21 Haziran 2005, Yaz Gündönümü



# Chaco Kanyonlu, New Mexico, 5000 yıllık





*Jan Parker 2009*





*Jan Parker 2009*



*Jan Parker 2009*



En eski gözlemevlerinden biri

# Kokino Gözlemevi – Makedonya, 3800 yıllık

Güneş ve Ay'ın hareketleri, ekinoks tarihleri



# Machu Picchu-Peru, Inka 2430m.



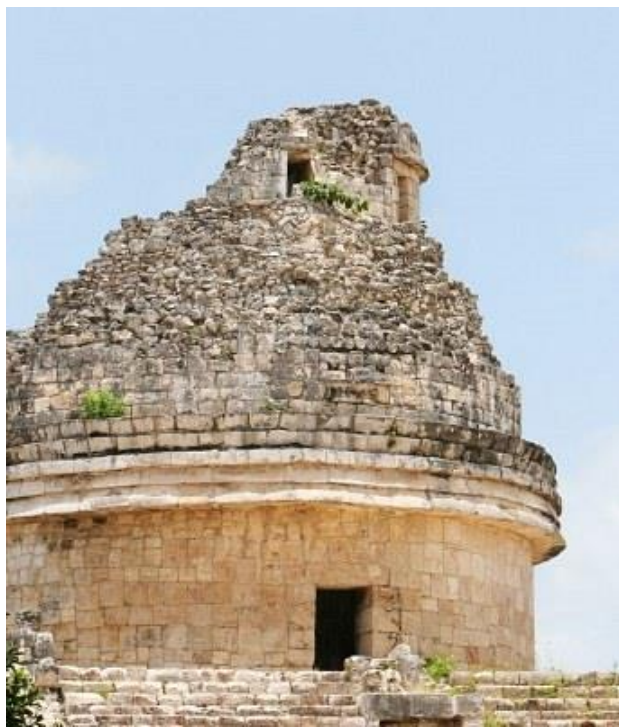






# El Carocal-Maya Gözlemevi

## Yucatan, Meksika



# El Mirador-Maya Gözlemevi



# Teleskop: Elektromanyetik ışığı toplayan en önemli alet

- Teleskoplar, gök cisimlerinin görünürdeki parlaklıklarını ve açısal boyutlarını artırır.
- [Galileo Galilei](#), teleskobu 1609'da astronomik amaçlar için kullandı.
- "Teleskop" sözcüğü genelde [optik teleskoplar](#) için kullanılır. Ancak, elektromanyetik tayfın diğer ışınimleri için de değişik teleskoplar vardır.



# İlk Teleskoplar

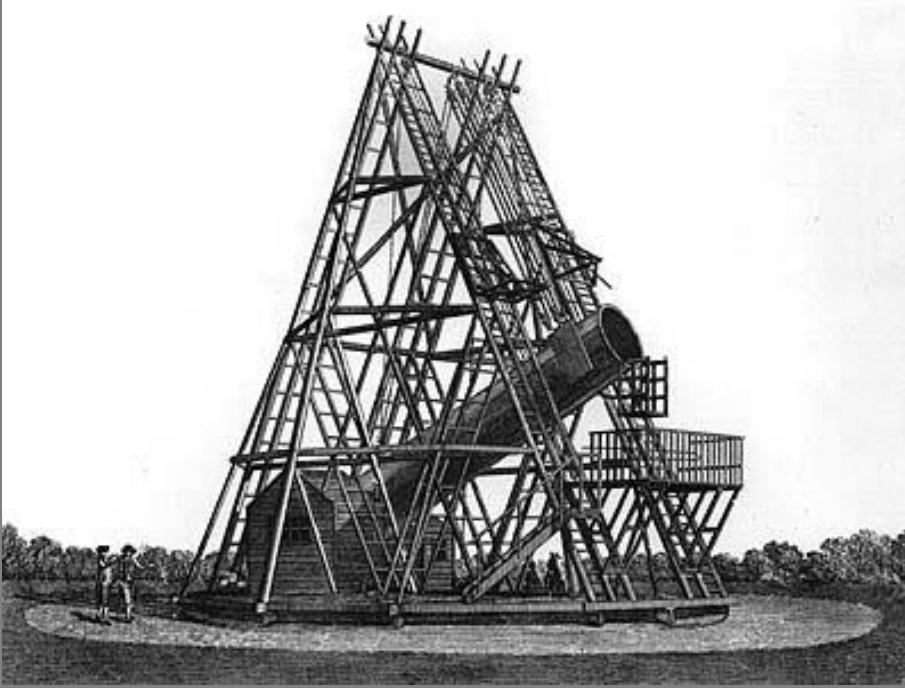


Galileo'nun mercekli teleskobu



Newton'un aynalı teleskobu

# İlk Büyük Teleskoplar

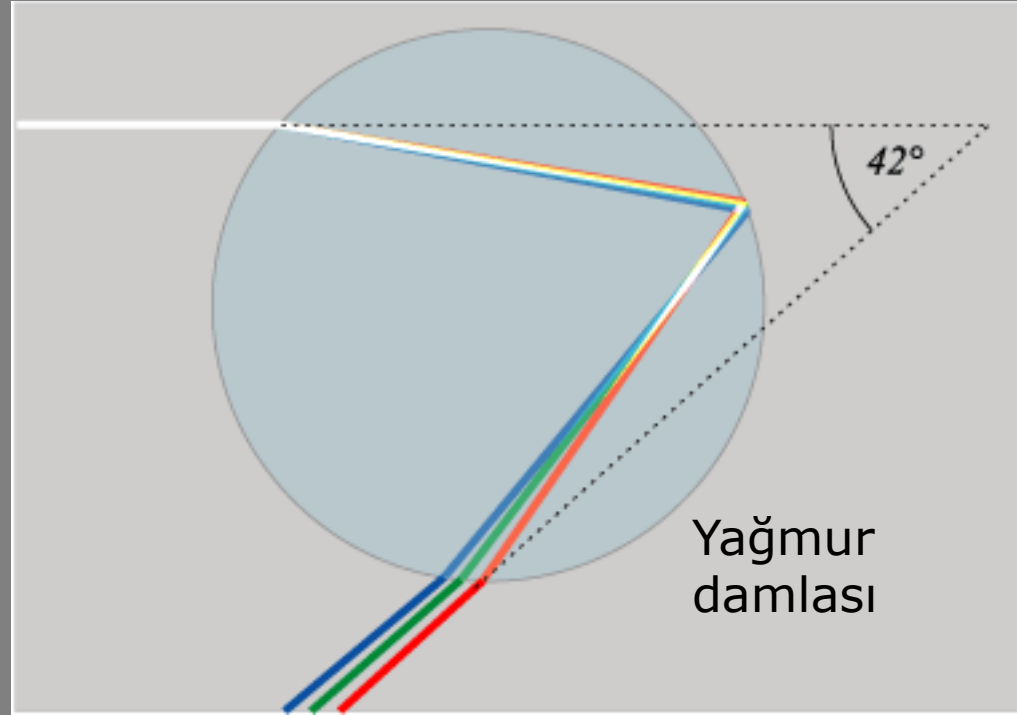
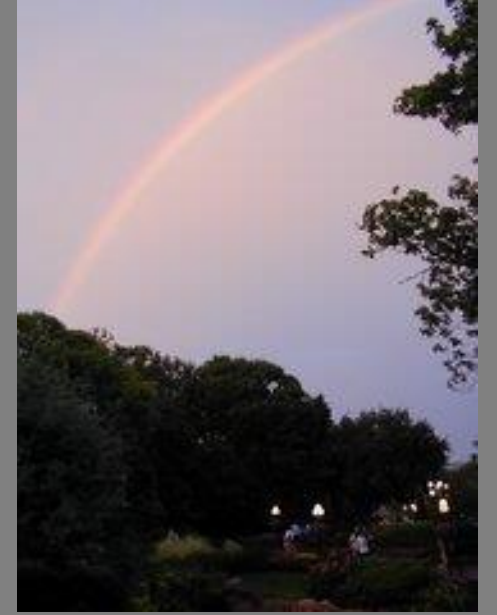
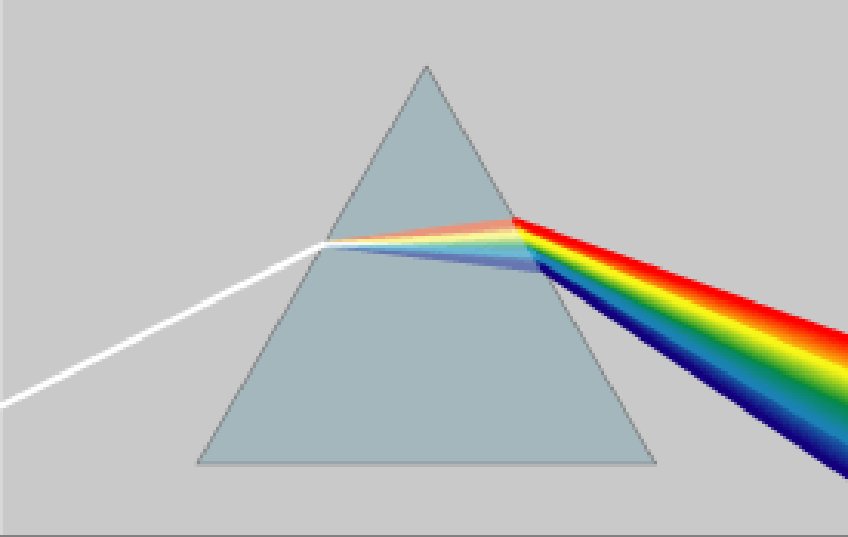


William Herschel'in  
en büyük teleskobu  
1700'lerin sonu



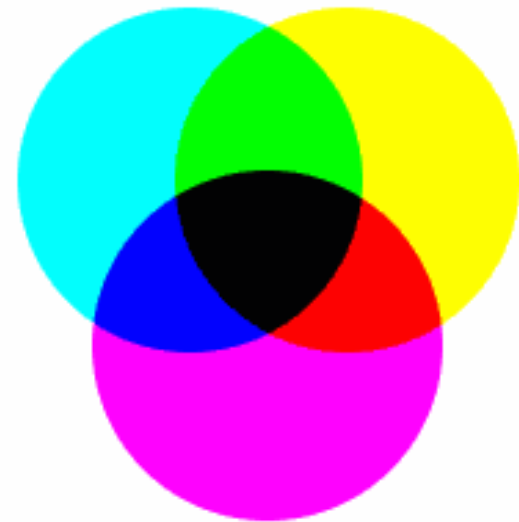
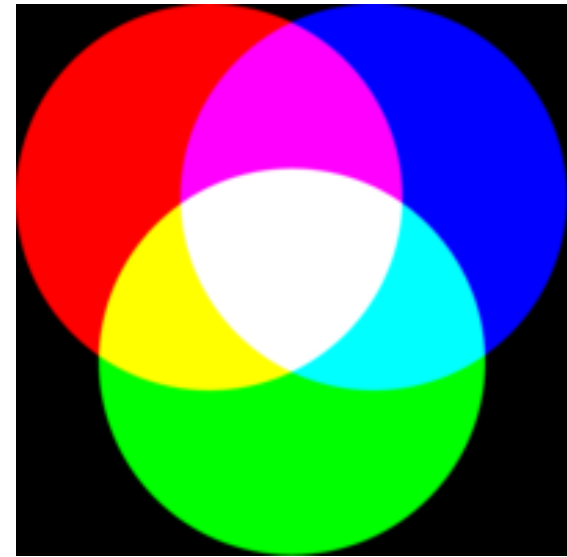
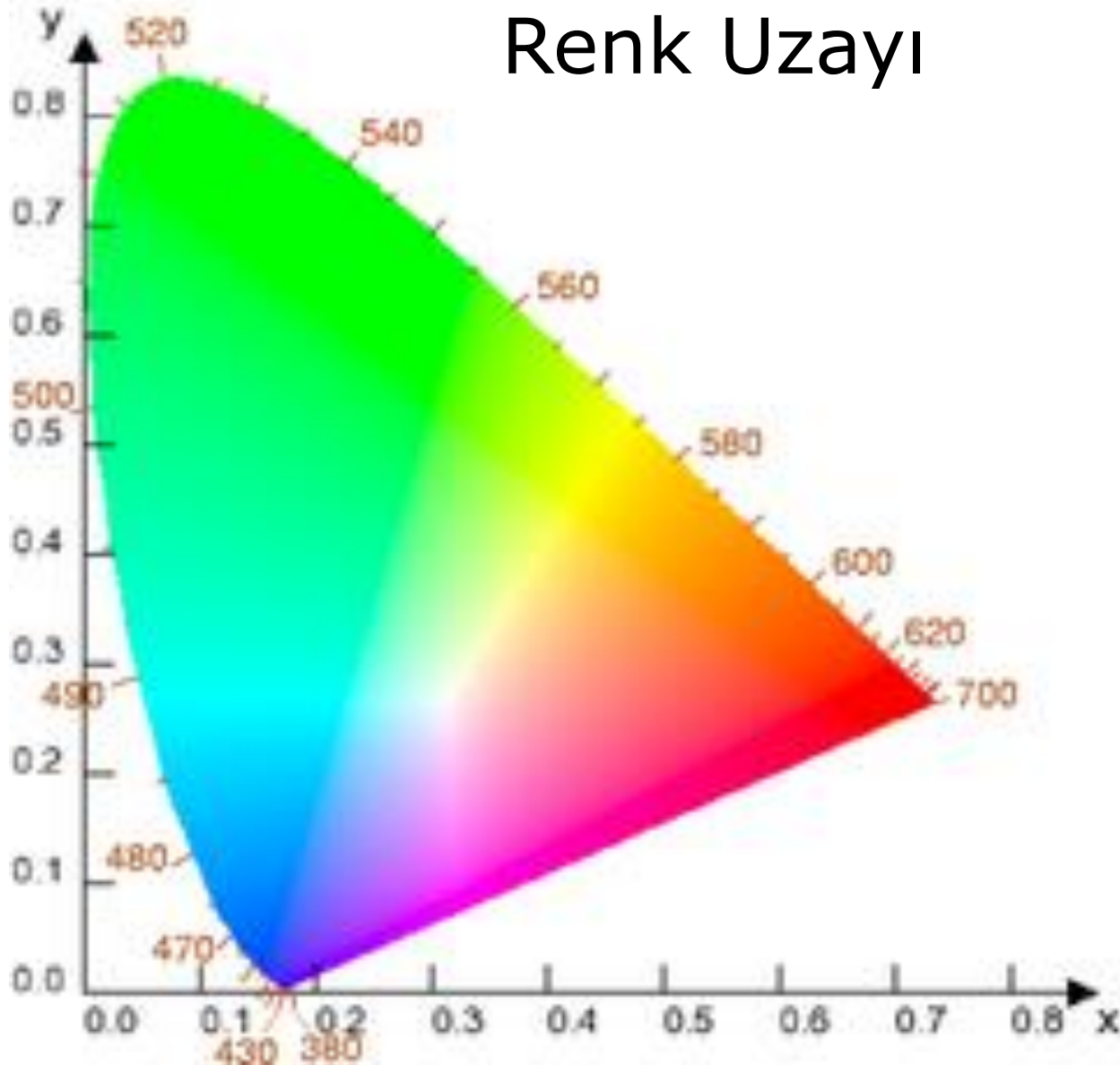
Lord Rosse'nin  
teleskobu (1840)

Bir mercek, içinden geçen ışığı prizmada olduğu gibi kırar.



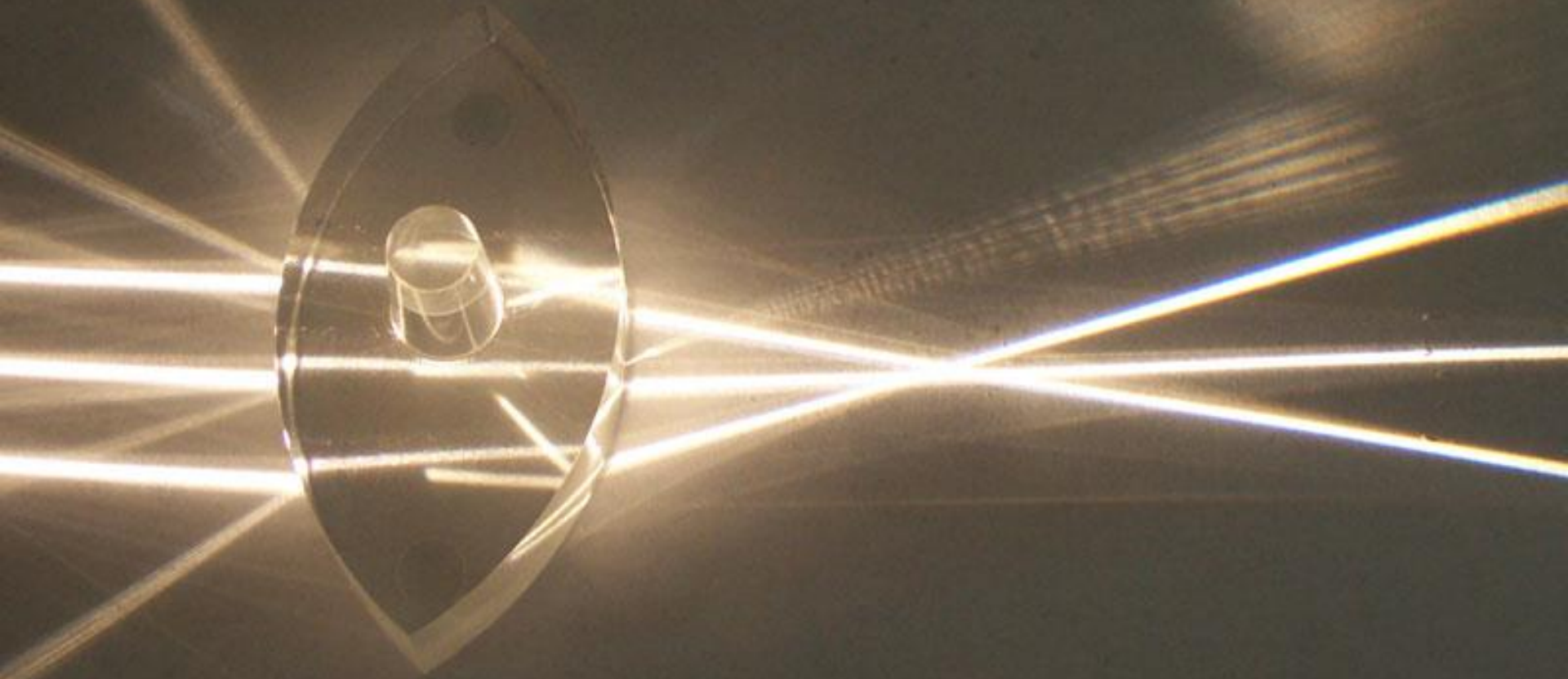
<http://en.wikipedia.org/wiki/Rainbow>

# Renk Uzayı

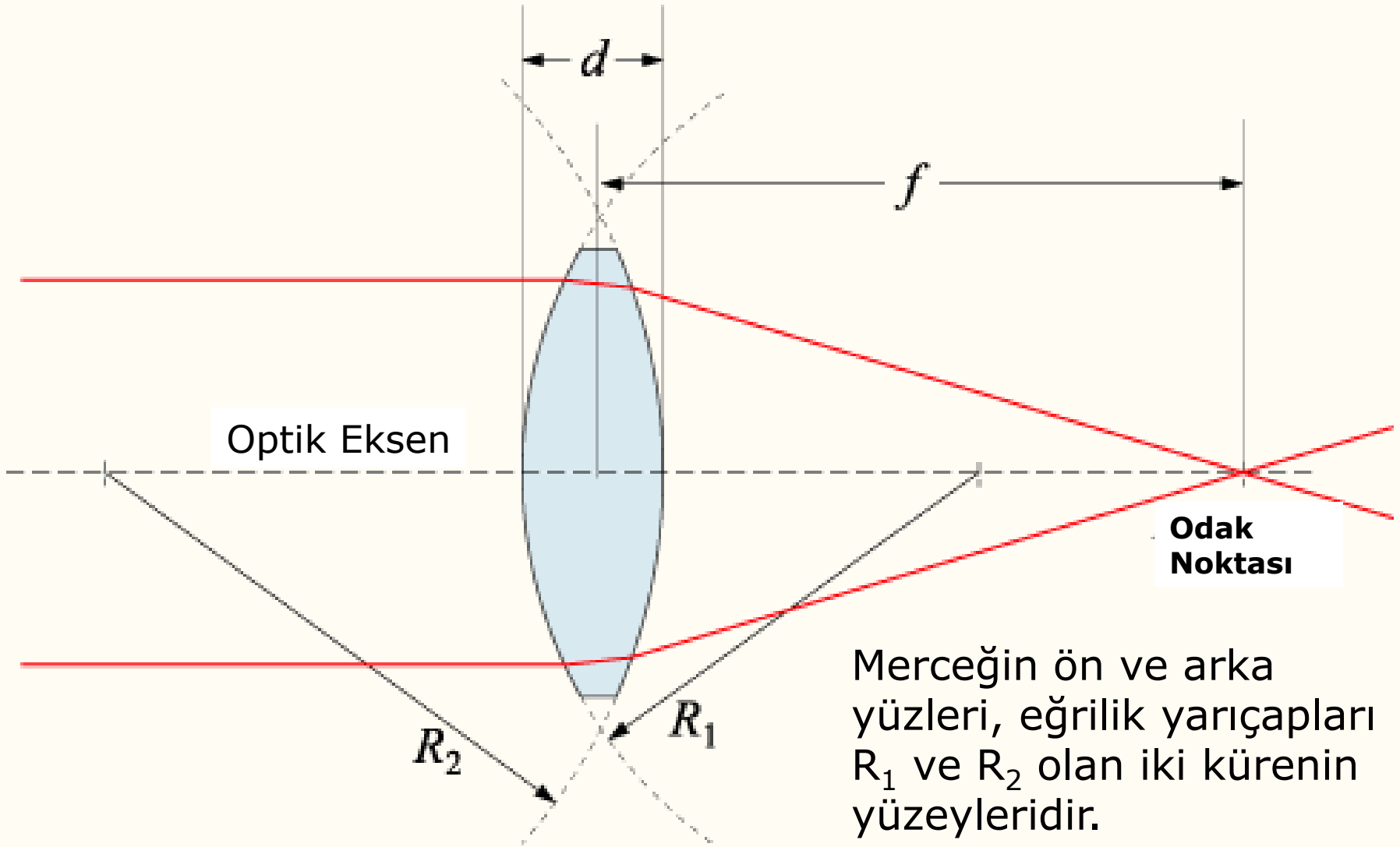


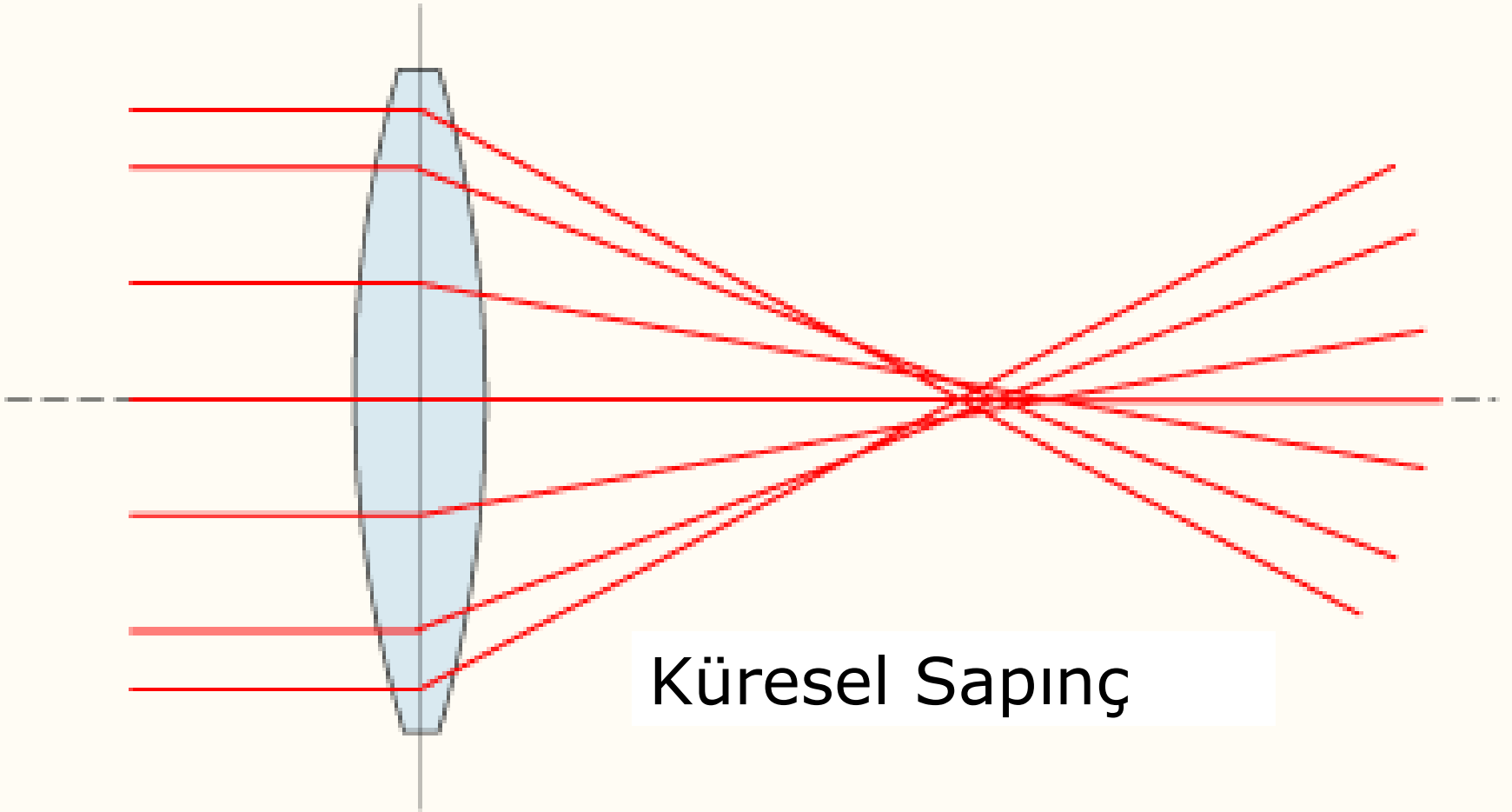
<http://en.wikipedia.org/wiki/Color>

# İnce Kenarlı Mercek

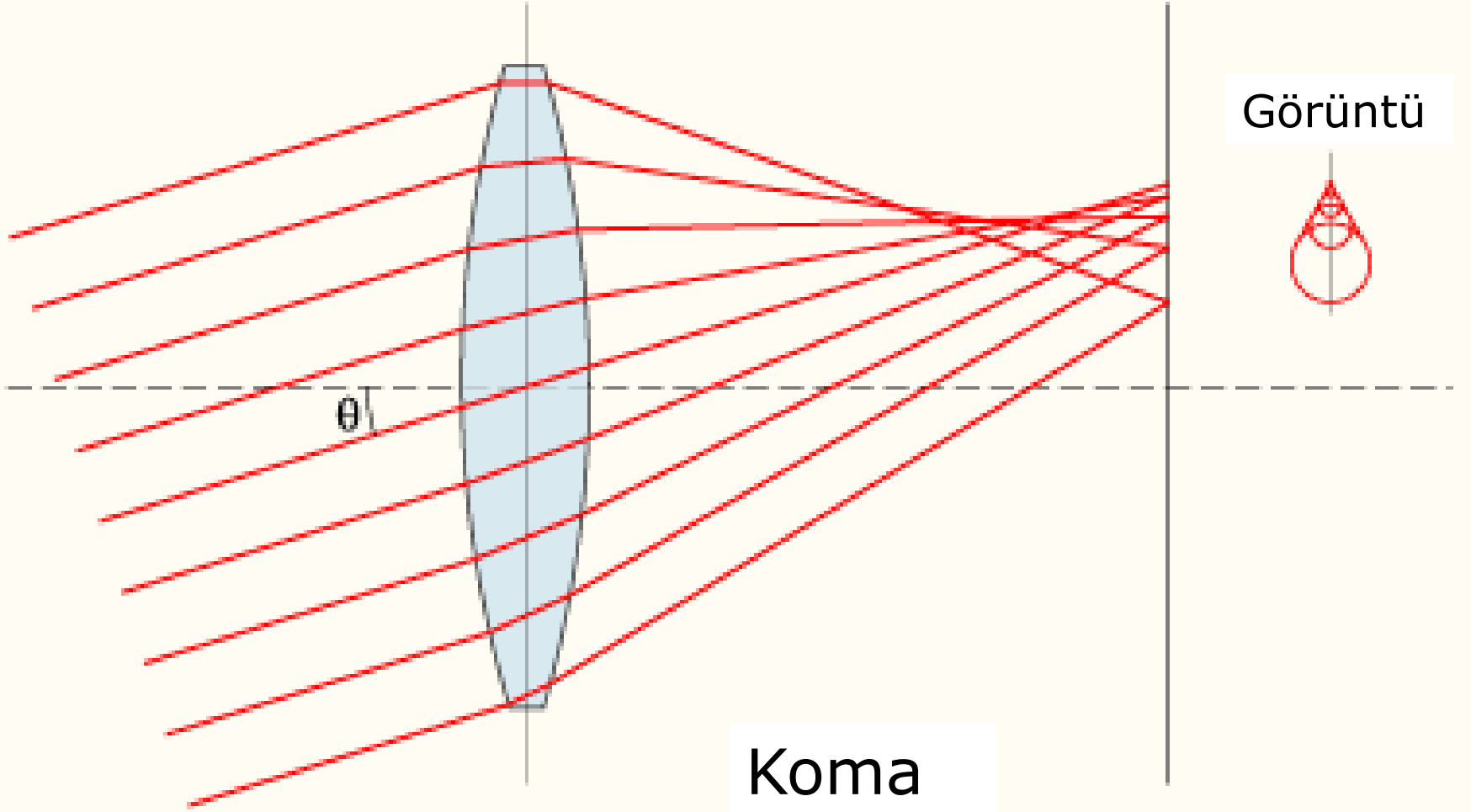


# Yakınsak (İnce Kenarlı, Pozitif) Mercek





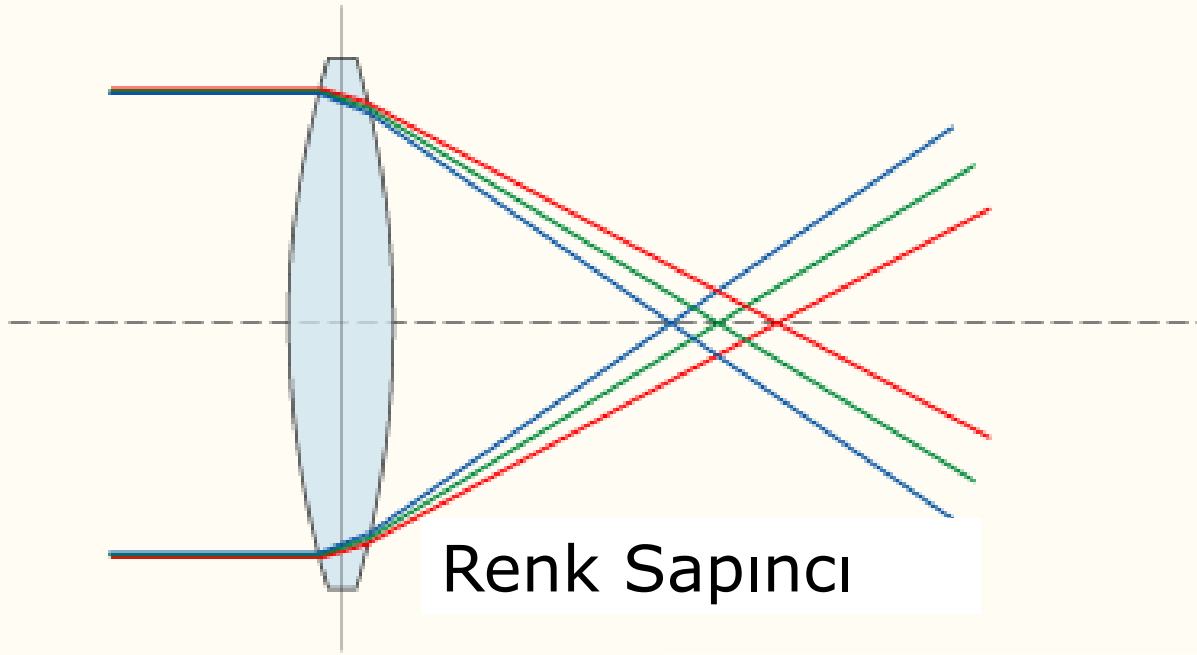
Küresel Sapınc



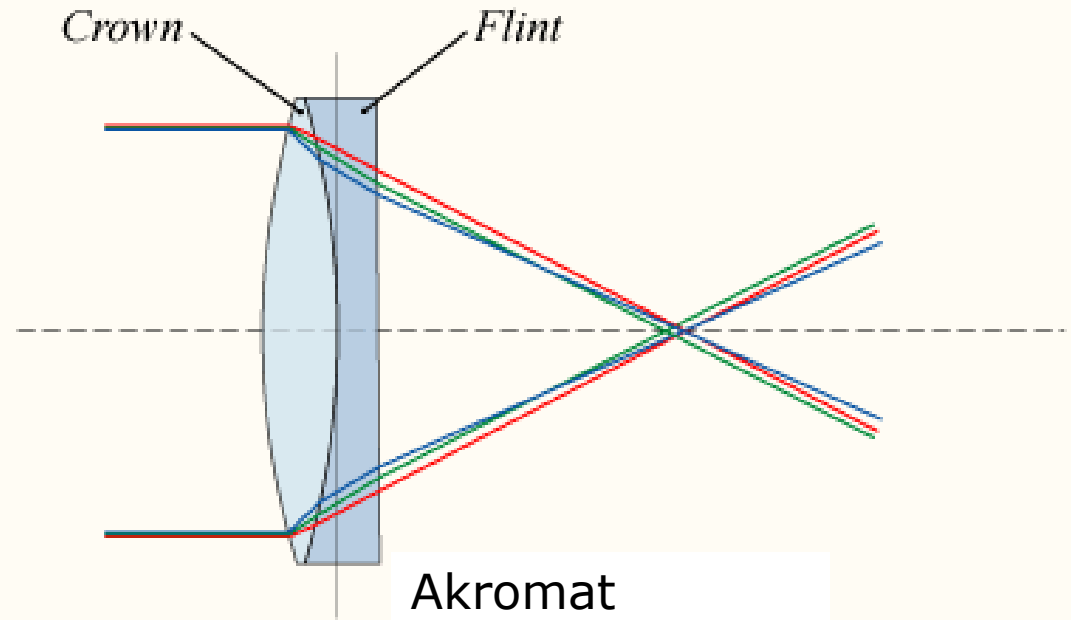
Görüntü

Koma





Renk Sapıncı



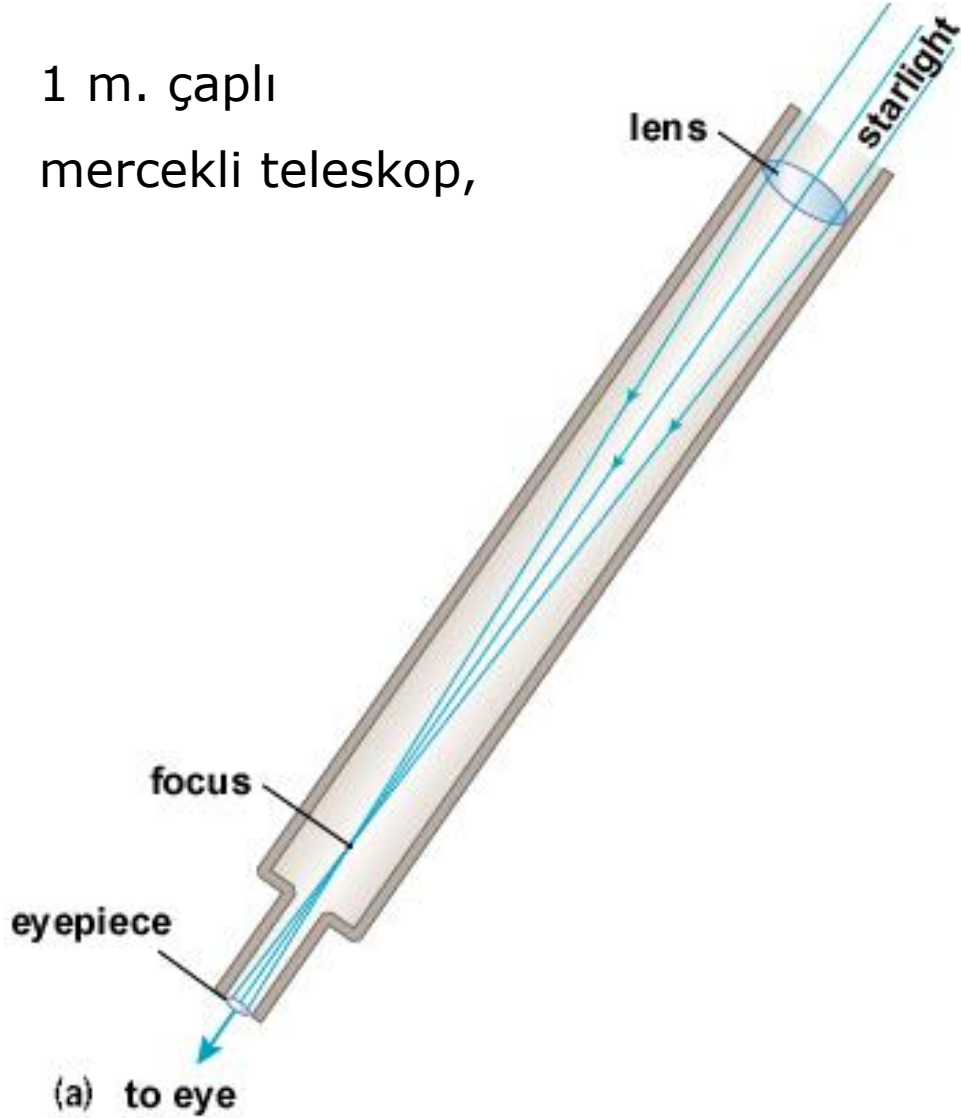
Akromat

# Küçük merceklı teleskoplar



# Yerkes Gözlemevi

1 m. çaplı  
mercekli teleskop,



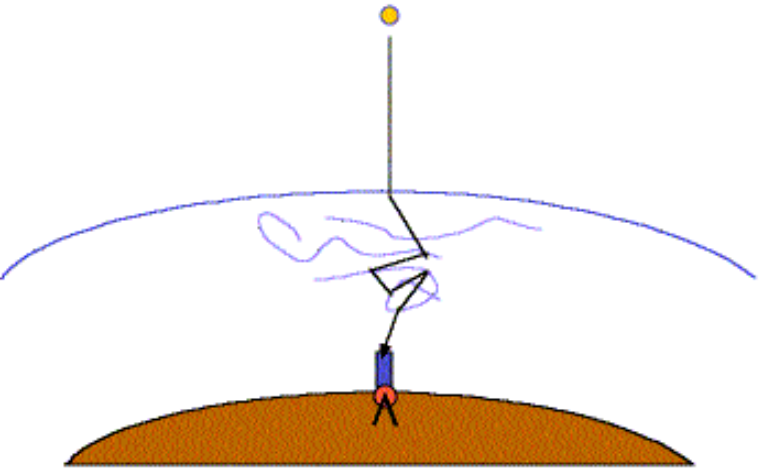
(b)



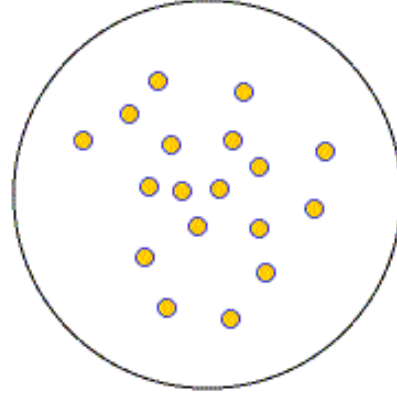
Ege Üniversitesi Gözlemevi,  
Cassegrain türü teleskop- 48 cm



15/07/2004

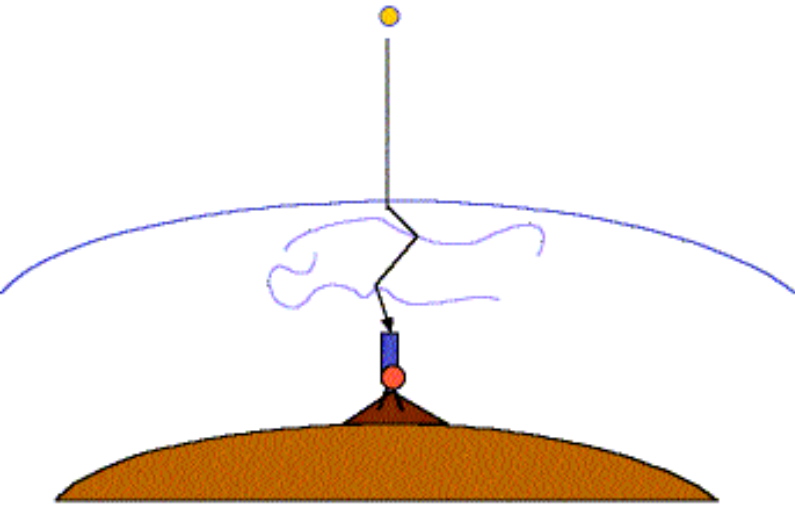


Teleskoptaki  
Görüntü

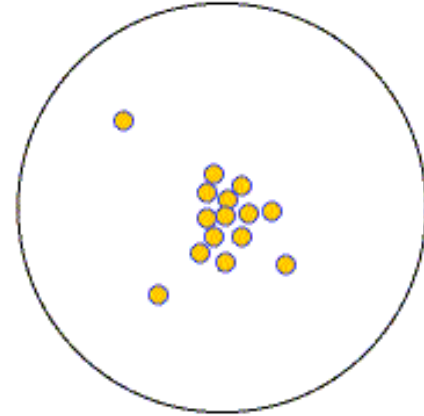


- **Çalkantı**  
(Turbulence)

- Teleskop yakınındaki veya atmosferdeki hava hareketleri, ışığı kırar ve görüntüde kaymalar ve titremeler oluşturur.

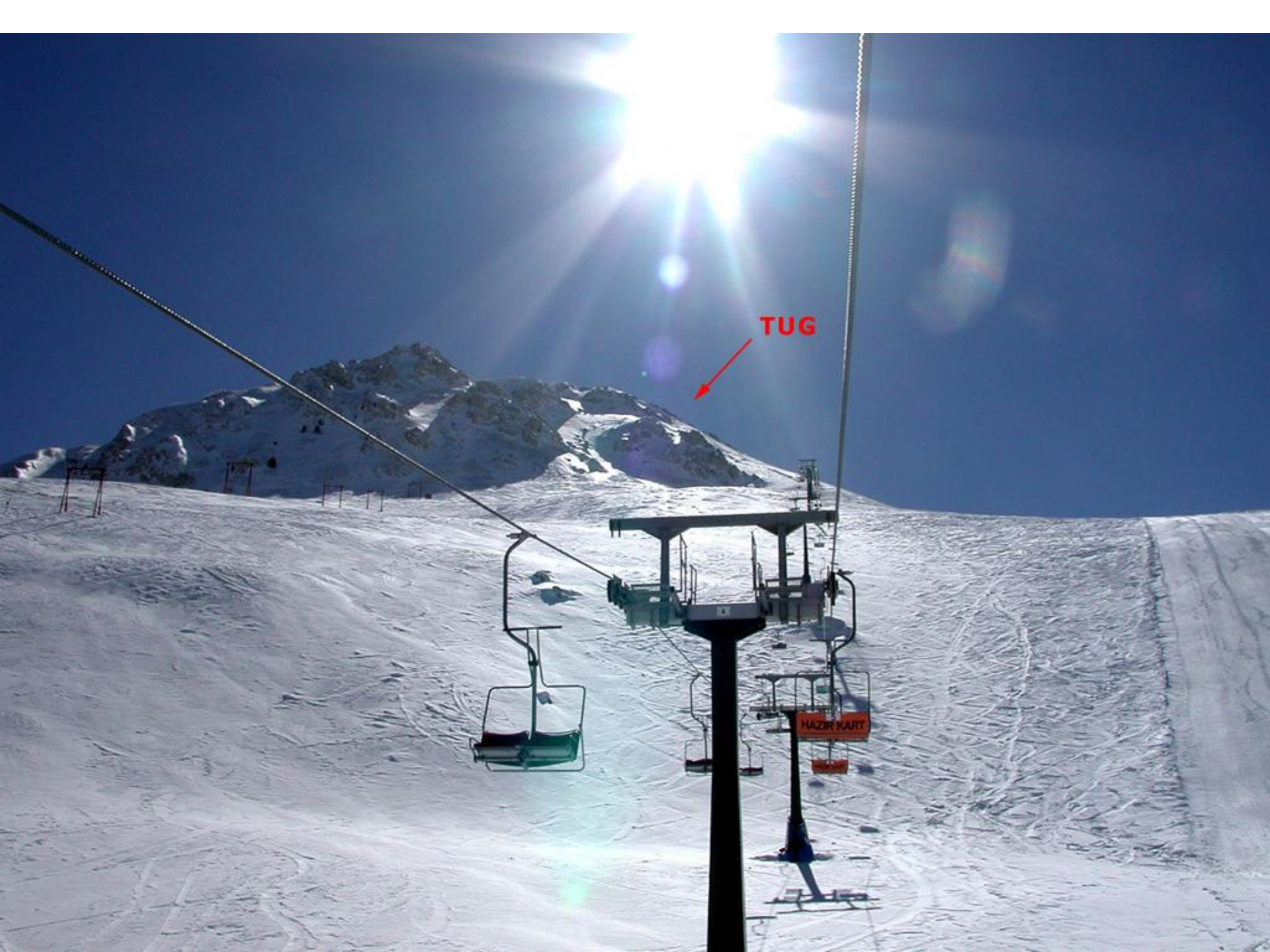


Teleskoptaki  
Görüntü

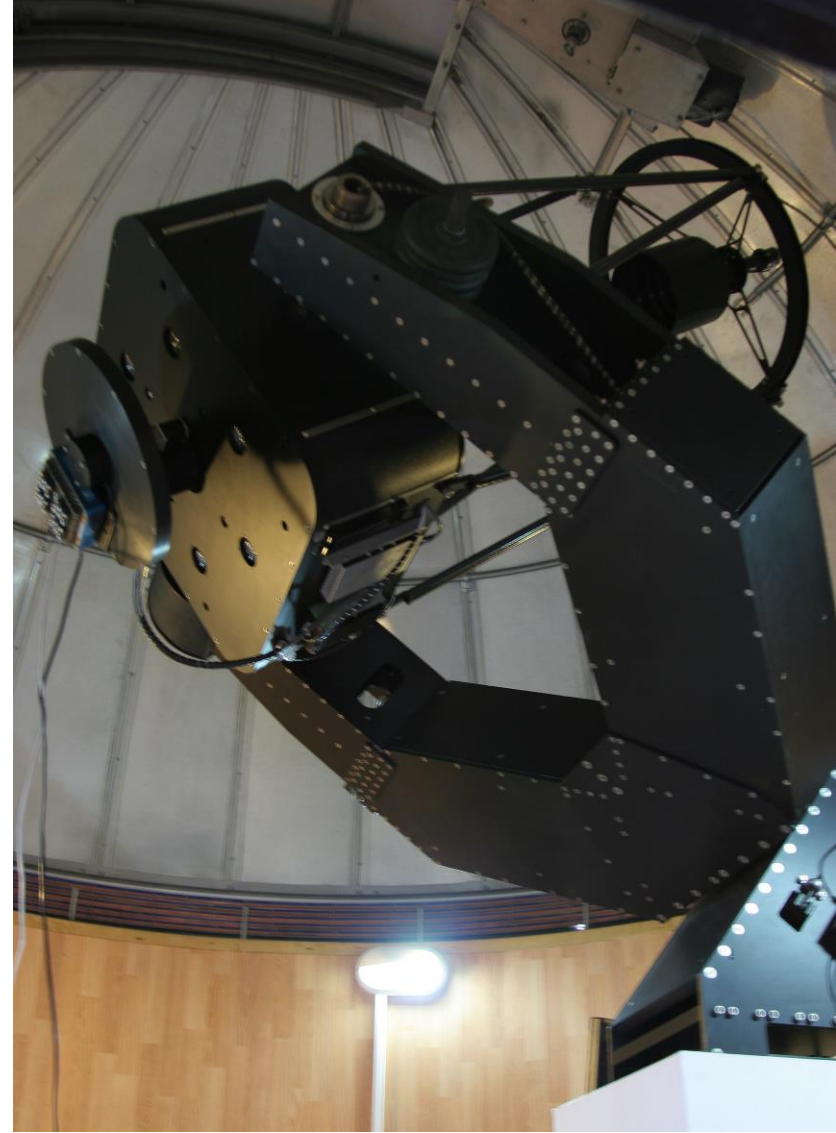
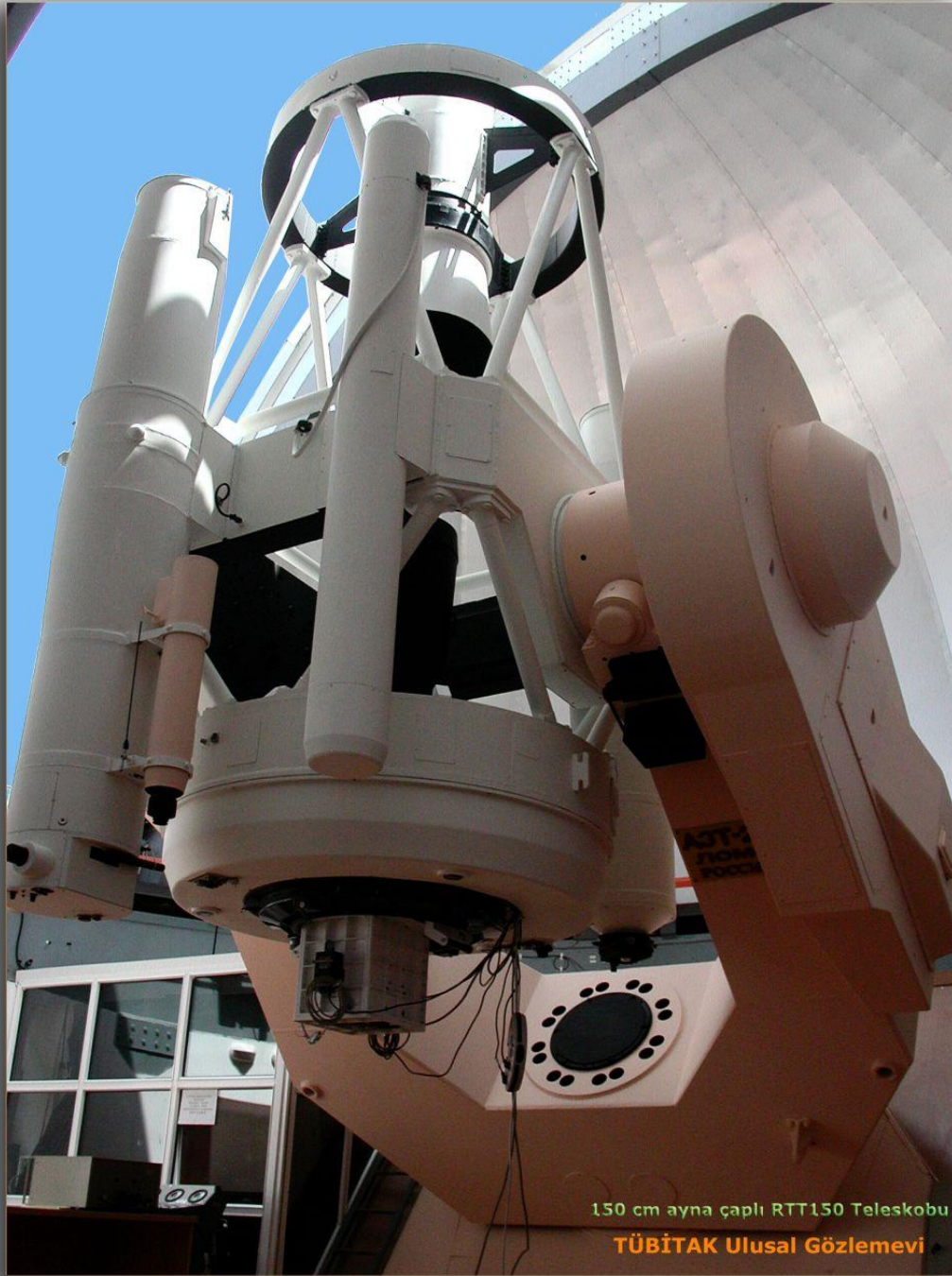


# TÜBİTAK ULUSAL GÖZLEMEVİ (TUG), Antalya





TUG







Dünyanın en büyük gözlemevleri  
Mauna Kea, Hawaii, 4200 m.



# Keck I ve II Teleskopları



Optik teleskoplar 10-m ayna (36 para)  
Mauna Kea, Hawaii - 4200 m.



Keck I ve II Teleskopları



KECK  
GÖZLEMEVİ

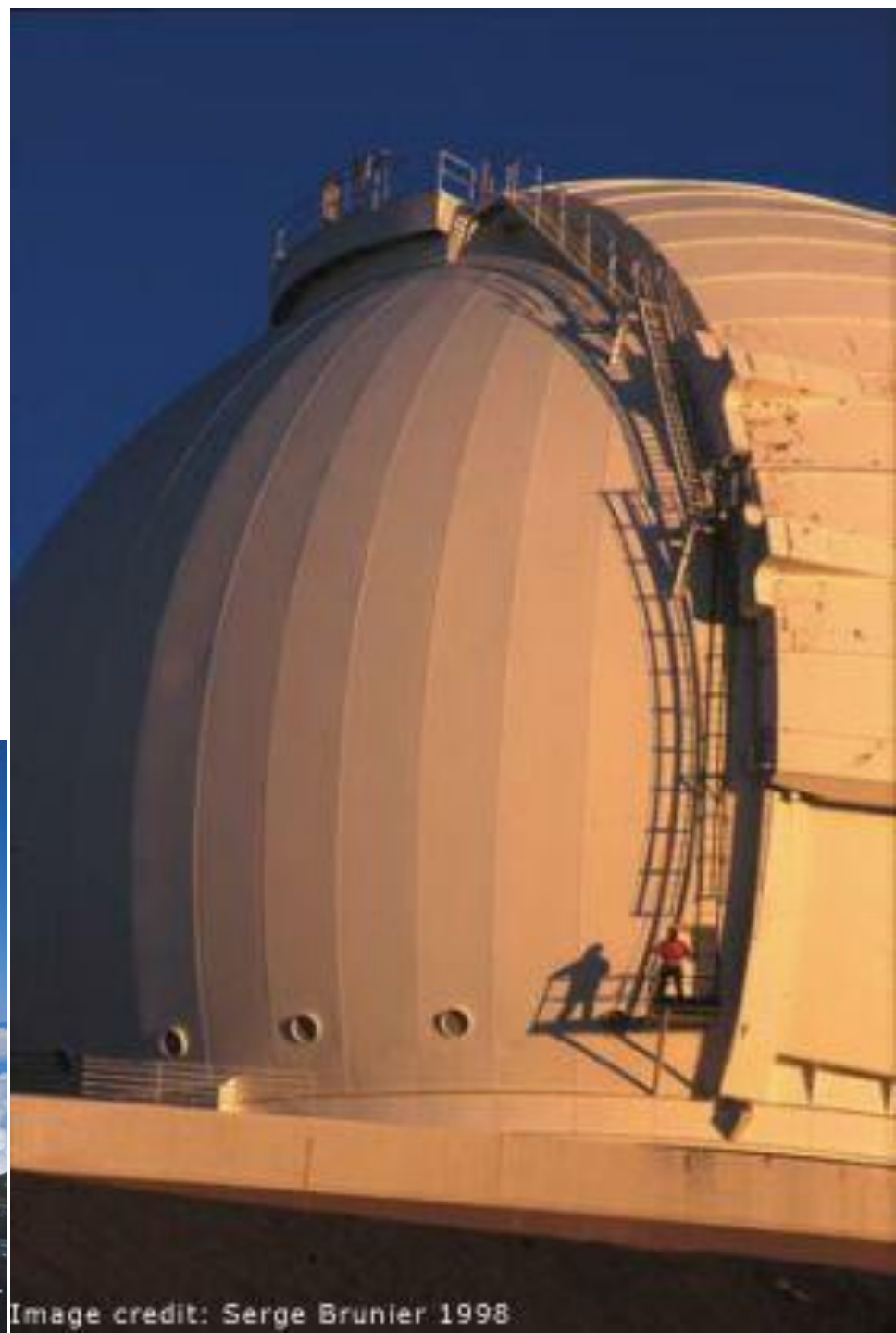


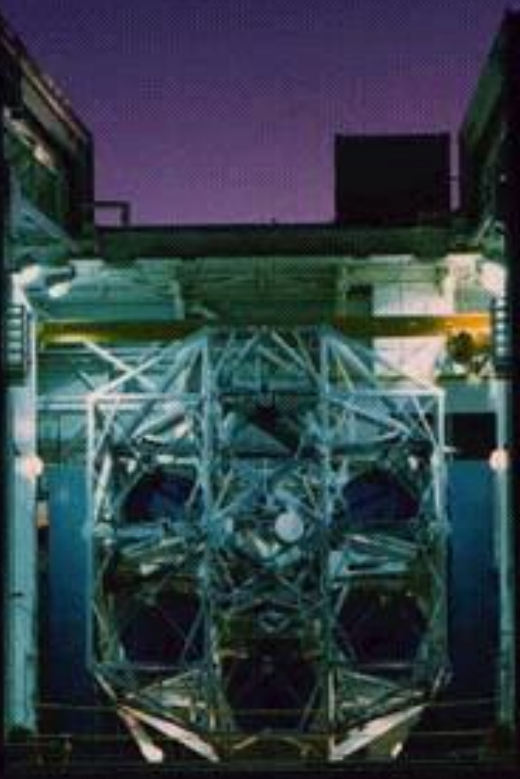
Image credit: Serge Brunier 1998

# Keck I ve II Teleskopları





**JAPON ULUSAL BÜYÜK TELESKOP PROJESİ**



**SUBARU**  
Ayna apı: 8.2 m



# GEMINI TELESKOBU, apı: 8.1 m



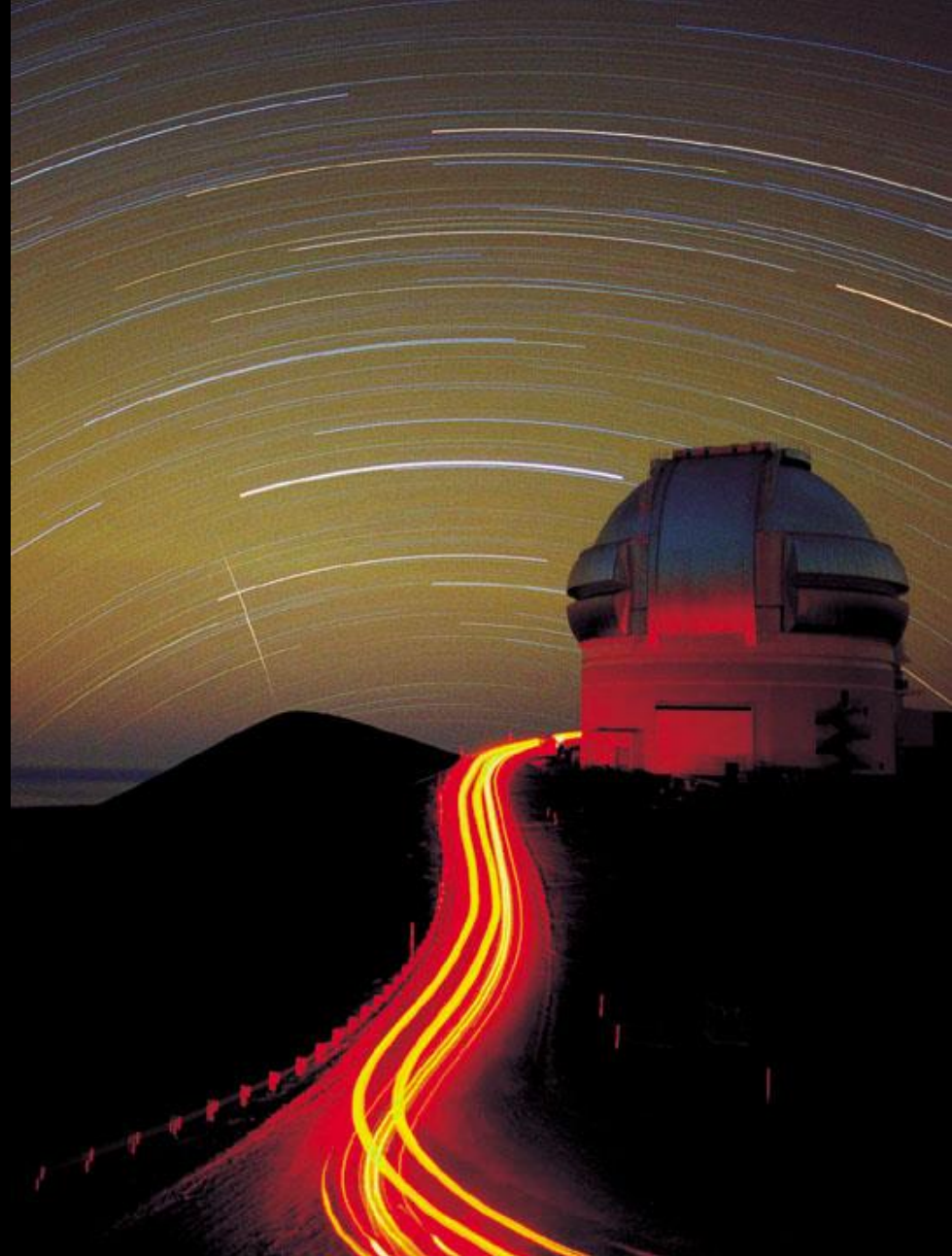
<http://www.gemini.edu/>

KUZEY GEMİNİ  
TELESKOBU



GÜNEY GEMİNİ  
TELESKOBU







# European Southern Observatory (ESO) La Silla, Şili



Paranal Gözlemevi



# ESO; Very Large Telescope



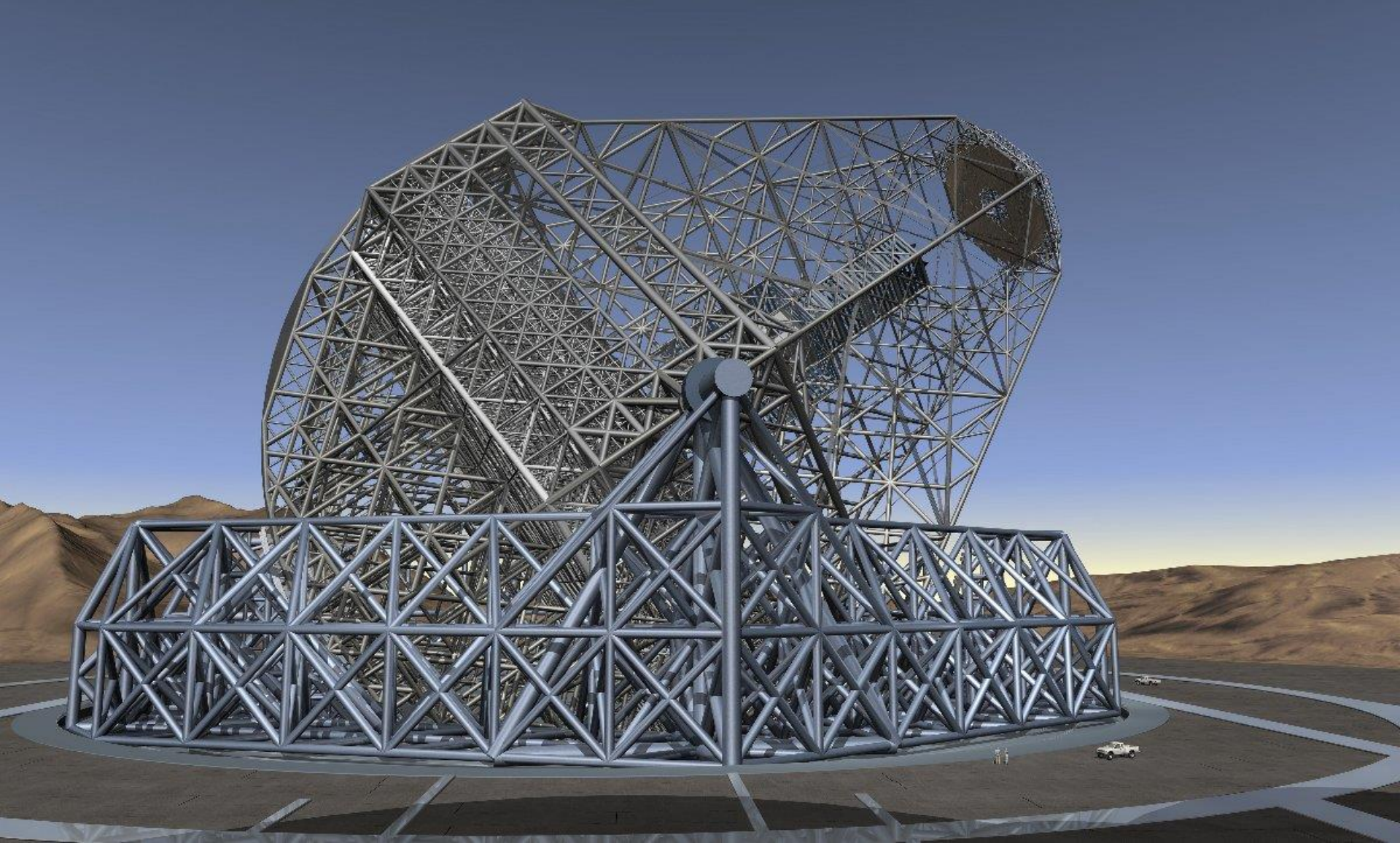
# Arecibo Radyo Teleskop (Puerto Rico)



Dünyanın en büyük radyo teleskobu  
Çapı: 305 m.



OWL





# EURO50 ve Boing 747

