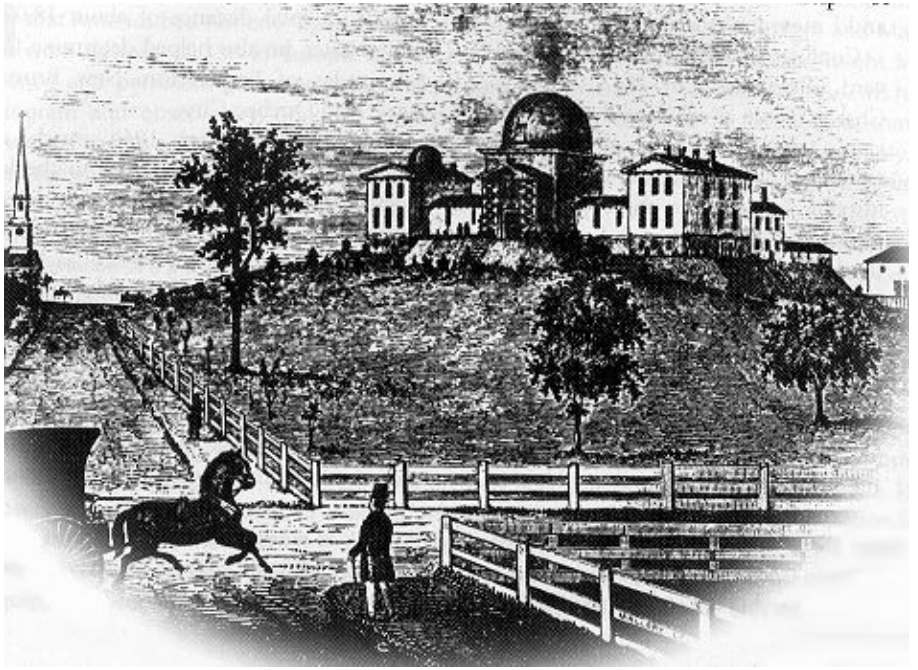
170 Years of Astronomy on Observatory Hill

HCO, SAO and CfA

Jonathan McDowell



Welcome to the Harvard-Smithsonian Center for Astrophysics (CfA).

We are one of the largest - possibly **the** largest – astronomy research institutions on the planet (*possibly, in the entire Orion arm*)

The CfA consists of two interwoven institutions, the Harvard College Observatory (HCO) and the Smithsonian Astrophysical Observatory (SAO); its buildings also house the Department of Astronomy of Harvard University.

Here at the CfA we:

- observe the universe, with ground-based telescopes in Arizona, Chile and Hawaii, and instruments in Earth orbit and deep space.
- design, develop and build astronomical instruments, telescopes and space payloads
- carry out theoretical investigations of the planets, Sun, stars, galaxy and universe
- house some of the crucial global services for the astronomy community (ADS, ds9, IAU-MPC, US Simbad-mirror)
- operate NASA's Chandra X-ray Observatory spacecraft for the community

Who we are

- 

Harvard-Smithsonian Center for Astrophysics (CfA)
60 Garden St, Cambridge

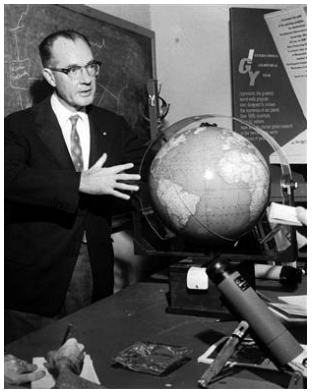
Harvard College Observatory (HCO)

Smithsonian Astrophysical Observatory (SAO)

Chandra X-ray Center (CXC)

Chandra Operations Control Center (OCC)
1 Hampshire St, Cambridge

CfA's Early History



1839 Harvard College Observatory founded

1842 HCO moves to Garden St

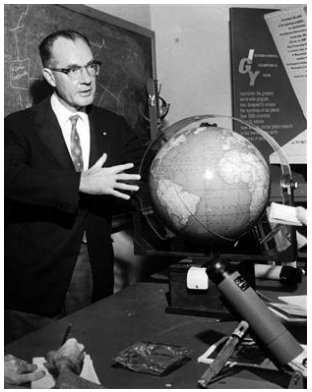
1847 The Great Refractor makes first observations
1847 Early daguerrotypes of the Moon
1848 Bond discovers Saturn VII (Hyperion)
1882 Harvard Photometry list of bright stars
1887 Plate surveys begin
1890 SAO founded in Washington, DC
Studies solar energy output

1890 Pickering and Fleming classify star types
1918-1924 Annie Cannon's HD catalog of stellar spectra published
1925 Cecilia Payne discovers stellar atms are hydrogen
1955 SAO moves to colocate with HCO
1957 Moonwatch project under Fred Whipple tracks Sputnik and other satellites
1973 SAO and HCO form the CfA
X-ray group joins CfA
1978 Einstein satellite (Giacconi, Tananbaum) studies X-ray sources
1981 CfA Redshift survey (Geller, Huchra) maps the cosmos'
1989 Latham's Planet HD114762b discovered (but not confirmed at that time) beginning modern extrasolar planet work
1993 Kirshner, Schmidt and Riess begin supernova distance work that reveals cosmological constant

The Great Refractor

15” telescope 1847

CfA's Early History



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1890: SAO in Washington

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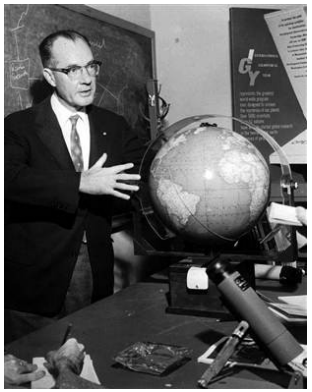

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Harvard University, Harvard University Archives, W432403_1

1893 – the Brick Building housing the Plate Stacks

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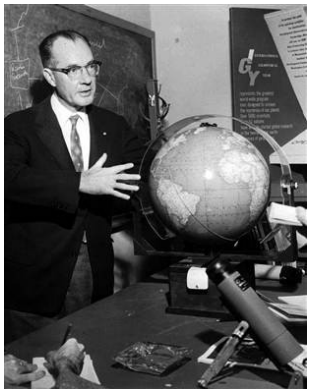

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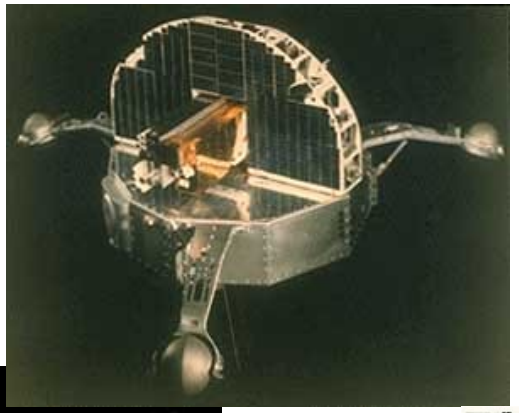
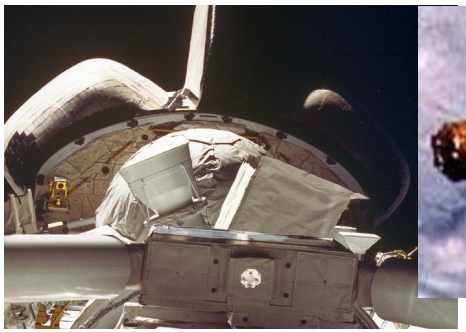
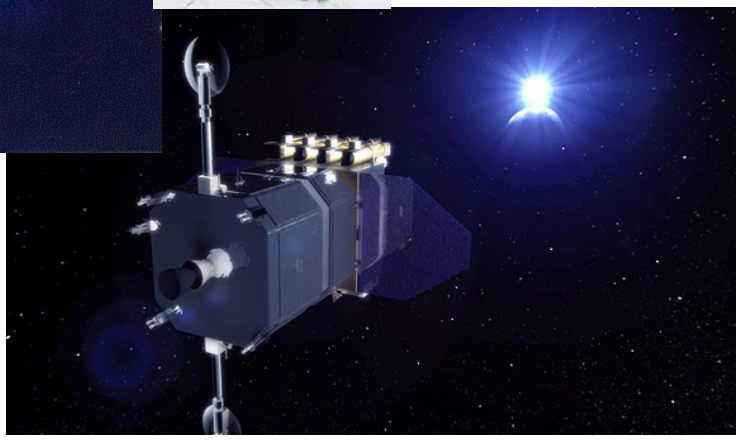
The CfA Space Program

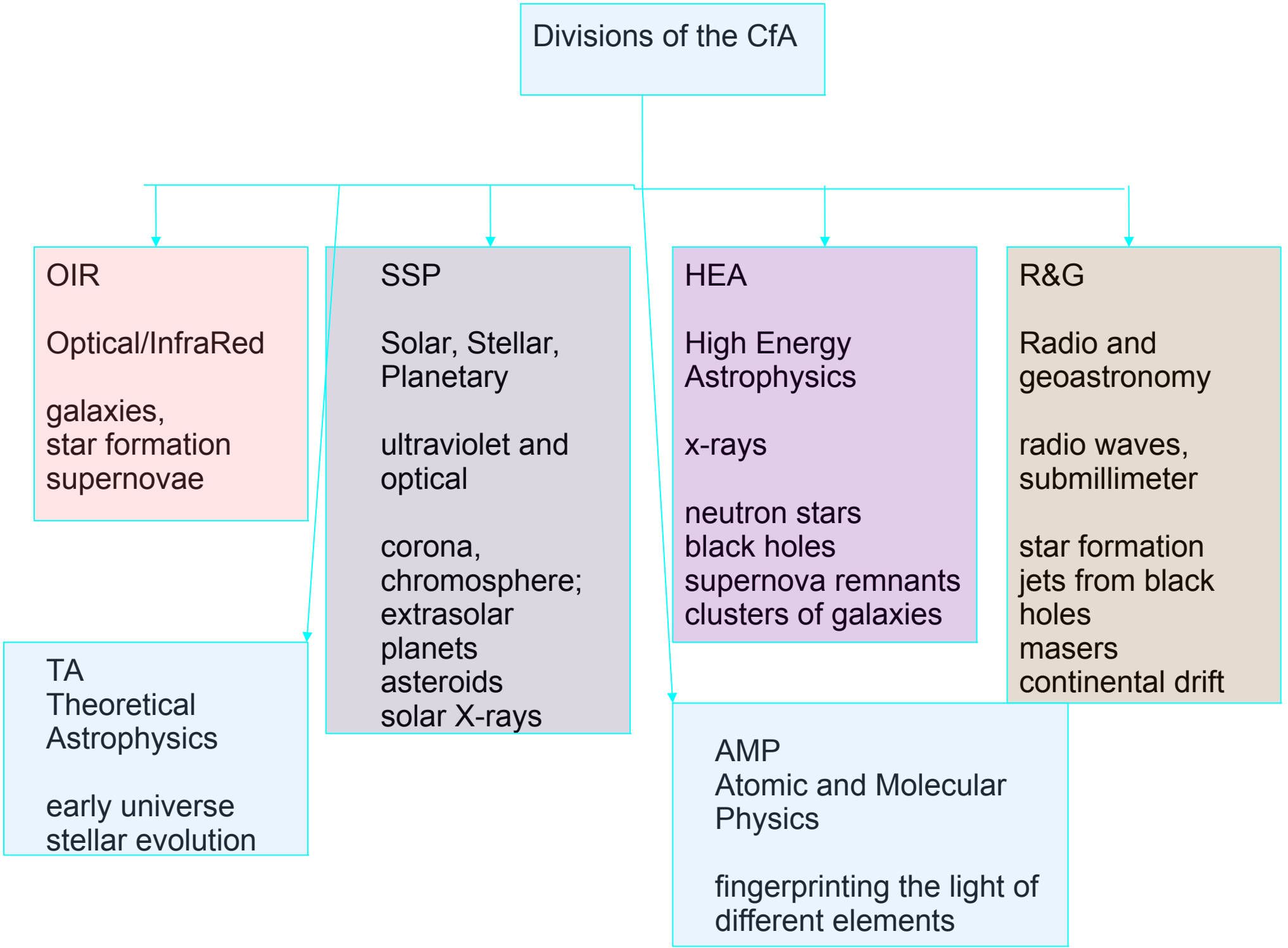


Orbiting Solar Observatory – 1962
OAO Celescope – 1968
Gravity Probe A - 1976
Einstein Observatory – 1978
Spacelab 2 IRT - 1985
ROSAT HRI telescope – 1990
SOHO UVCS telescope – 1995
Spartan 201 - 1995
TRACE – 1998
SWAS - 1998
Chandra – 1999
Spitzer IRAC camera - 2003
XRT on Hinode - 2006
AIA on Solar Dynamics Observatory – 2010
IRIS - 2013

+ major participation in other missions, especially Kepler






Divisions of the CfA
OIR
Optical/InfraRed
galaxies,
star formation
supernovae
SSP
Solar, Stellar, Planetary
ultraviolet and optical
corona, chromosphere; extrasolar planets
asteroids
solar X-rays
HEA
High Energy Astrophysics
x-rays
neutron stars
black holes
supernova remnants
clusters of galaxies
R&G
Radio and geoastronomy
radio waves, submillimeter
star formation
jets from black holes
masers
continental drift
TA
Theoretical Astrophysics
early universe
stellar evolution
AMP
Atomic and Molecular Physics
fingerprinting the light of different elements

Giant Magellan Telescope 7 x 8.4m segments