

You are welcome to nominate speakers to [colloquium@nao.cas.cn](mailto:colloquium@nao.cas.cn). The video and slide of previous colloquia and more information can be found at <http://colloquium.bao.ac.cn/>.

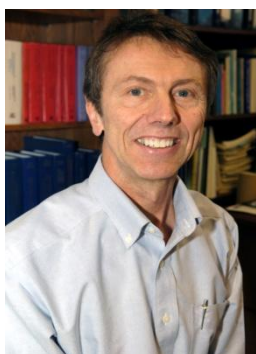
# 国台学术报告NAOC COLLOQUIUM

2014年 第20次 / Number 20 2014

**Time: Thursday 2:30PM, May.08 Location: A601 NAOC**

## Gamma Ray Bursts and the Birth of Black Holes

### Dr. Neil Gehrels (NASA/GSFC)



Dr. Neil Gehrels is Chief of the Astroparticle Physics Laboratory at NASA's Goddard Space Flight Center. He is also an adjunct professor of astronomy, at the University of Maryland and an adjunct professor of astronomy & astrophysics at Pennsylvania State University. He is Principal Investigator of NASA's SWIFT Observatory which was launched in November 2004 and Project Scientist for the WFIRST mission. His research involves building space flight instruments to observe explosive events in the cosmos such as gamma-ray bursts and supernovae. He received his Ph.D. in physics at Caltech in 1981. He is a member of the USA National Academy of Sciences.

### Abstract

Gamma-ray bursts (GRBs) are powerful explosions, visible to high redshift, and thought to be the signature of black hole formation. The Swift observatory has been detecting 100 bursts per year for 8 years and has greatly stimulated the field with new findings. Observations are made of the X-ray and optical afterglow from ~1 minute after the burst, continuing for days. Evidence is building that the long and short duration subcategories of GRBs have very different origins: massive star core collapse to a black hole for long bursts and binary neutron star coalescence to a black hole for short bursts. The similarity to Type II and Ia supernovae originating from young and old stellar progenitors is striking. Bursts are providing a new tool to study the high redshift universe. Swift has detected many events at  $z > 5$  and one at  $z = 9.4$  giving metallicity measurements and other data on galaxies at previously inaccessible distances. The talk will present the latest results from Swift in GRB astronomy and will discuss fundamental aspects of black holes related to GRBs.



*All are welcome! Tea, coffee, biscuits will be served at 2:15 P.M.*