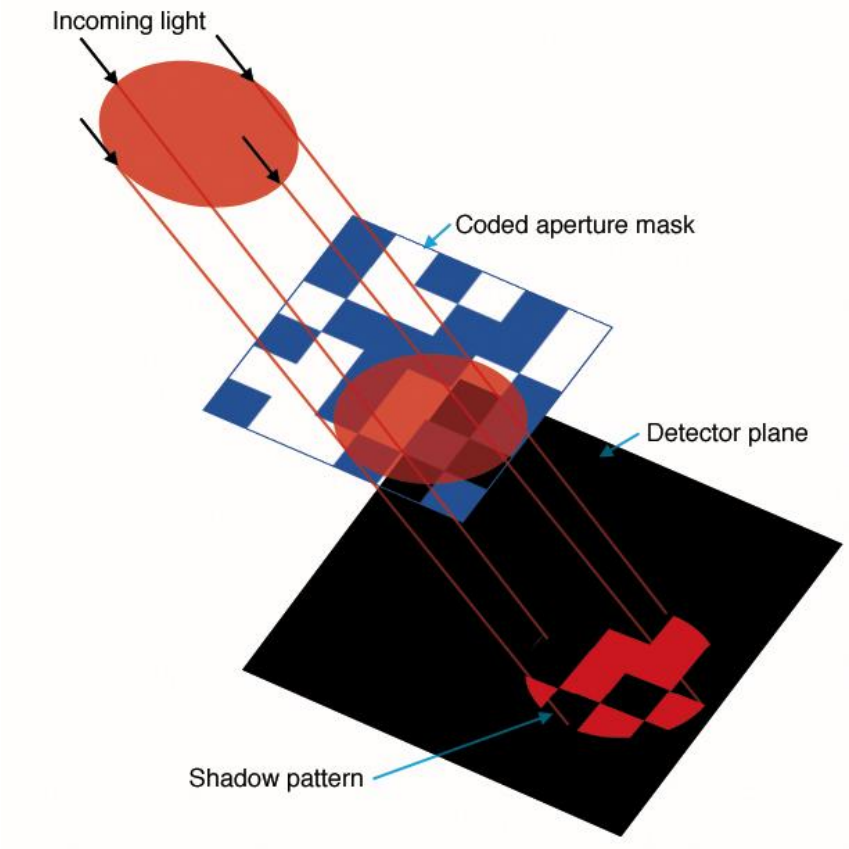
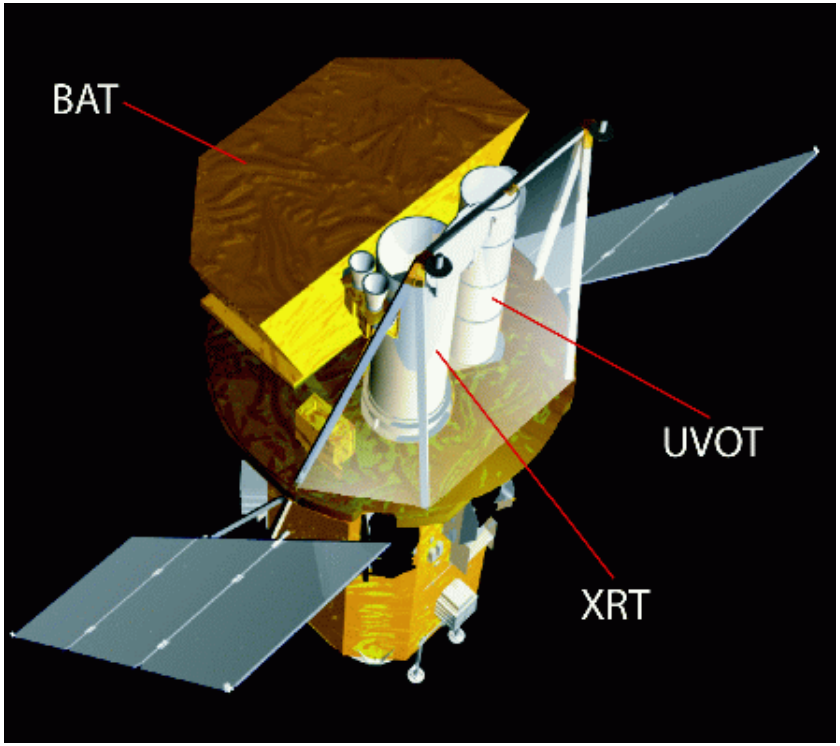
The Swift BAT Hard X-ray Survey

Neil Gehrels
Swift Principal Investigator
NASA Goddard Space Flight Center

The Swift BAT Hard X-ray Telescope

The Swift Burst Alert Telescope (BAT) finds supermassive black holes in active galaxies.

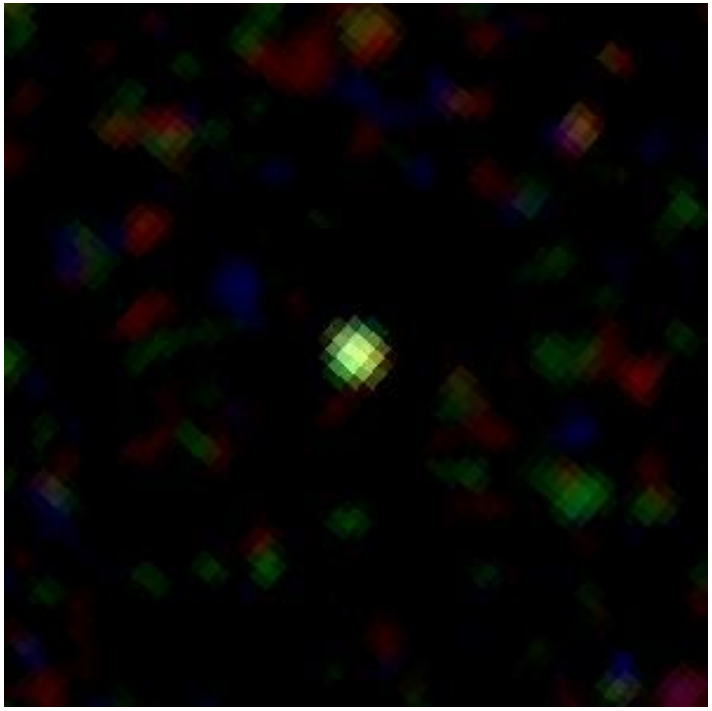




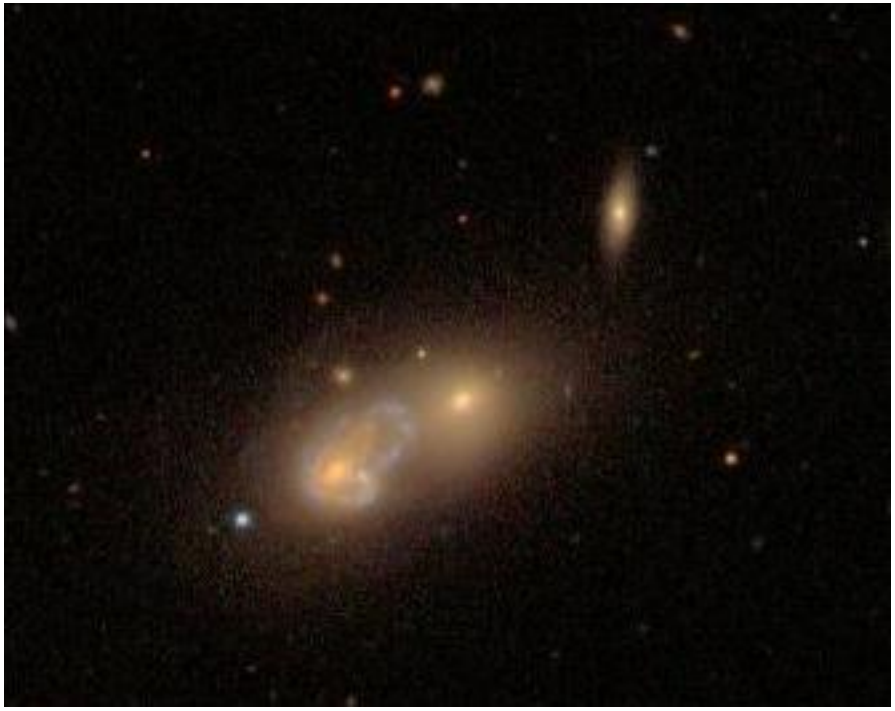
The Swift BAT is not like a normal telescope. It has a very wide field of view (about 1/10th of the sky) and observes in energetic ("hard") X-rays.

Hard X-rays vs. Visible Light

The black hole's optical emission is blocked by gas and dust but its high-energy X-rays are not. X-rays directly detect the energetic black hole that can be hidden in other bands.

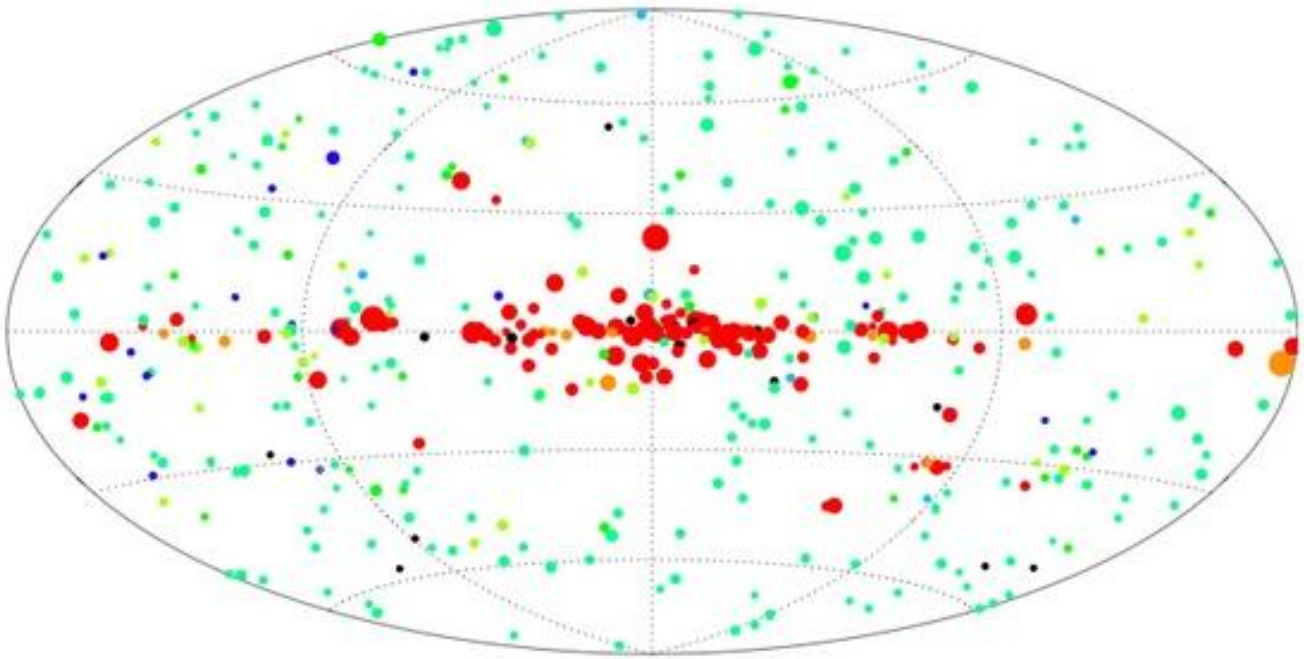


BAT X-ray image



Optical image

BAT Hard X-ray Survey Sources



The survey is limited to the nearby universe (out to about 650 million light-years, or redshift <0.05).

Future X-ray satellites, such as NuSTAR, launching in 2012, will enhance our understanding of how active galaxies are powered at greater distances.