Astronomical Photographic Data Archive (APDA)

Understanding the physics of astronomical objects relies heavily on observations of change. Short-term changes can be studied through new observations, but what of changes that happen slowly over decades, sometimes almost imperceptibly, occasionally violently, often serendipitously? We can know nothing of those phenomena unless we can access observations taken over decades of time, a process we call Time Domain Astronomy.

Fortunately, astronomy has rich archives of observations spanning more than 130 years from the mid 1800's to the 1990's. These treasured observations are stored on photographic glass plates and film, estimated to total between one and two million in North America. Unfortunately, this enormously important resource was in danger of being lost forever because there was no centralized collection point for this historic data.

In the fall of 2007, a group of 31 international scientists gathered at PARI to develop a national plan for the preservation of astronomical photographic data. They established the Astronomical Photographic Data Archive (APDA), housed at PARI and dedicated to the task of collecting, restoring, preserving and storing photographic data. APDA is also tasked with scanning each image and establishing a database of images that can be accessed via the Internet by the global community of scientists, researchers and students.

Housed in a highly secure building on the PARI campus, the APDA now has a director and a collection of more than 340,000 photographic plates and films from more than 50 observatories. APDA also possesses several high precision digitizing instruments, including scanners donated by the Space Telescope Science Institute (STScI) and Yale University. The historic GAMMA II scanner was originally constructed for NASA and STScI to develop the Guide Star Catalog and Digitized Sky Survey projects that guide and direct the Hubble Space Telescope. At PARI it has been rebuilt with a digital camera for more efficient digitization of photographic plates. APDA also has a high precision transmission scanner and another stationary digital camera for lower spatial resolution digitization projects. EMC Corporation donated a networked storage system and software that can store up to 800 terabytes of research data.

The donations to date by PARI, STScI, Yale and EMC have allowed the APDA to begin its work. Funding is now needed to ensure that it can continue.