

# Possible Multi-Cycle Treasury Program

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If everything goes according to plan, next August the Kennedy Space Center will host a spectacular sight: two space shuttles, poised on adjacent launch pads, ready to go into space. *Atlantis* will be heading to the *Hubble Space Telescope* for the last servicing mission; *Endeavor* will be prepared, if necessary, to rescue the crew of the *Atlantis*. This dramatic display of strategic assets will testify to NASA's commitment to space science.

The primary goal of Servicing Mission 4 (SM4) is to maximize the scientific return from *Hubble* over the following five years.

Here at the Space Telescope Science Institute, we have the responsibility to ensure that the science flowing from the newly refurbished *Hubble* fully justifies the incredible investment the nation, NASA, and the astronaut corps are making in this last servicing mission. Thus, we are inviting input from the community about a possible new class of very large observing programs following SM4.

After SM4, *Hubble* will have new gyros, batteries, and more powerful instrumentation than ever before in its history. The Wide Field Camera 3 (WFC3) and Cosmic Origins Spectrograph (COS) will be installed. If all goes well, we will also have a new Fine Guidance Sensor (FGS) and a repaired Space Telescope Imaging Spectrograph (STIS). NASA is even exploring how to repair the Advanced Camera for Surveys (ACS), which was *Hubble's* imaging workhorse until it died in late January 2007. Not until *Webb* flies in 2013 will the community have access to so powerful a space observatory as the refurbished *Hubble* will be after SM4.

So how should we allocate time after this last visit to *Hubble*? What programs should we contemplate? Are our current modes of operation sufficient, or are there science questions that demand greater resources?

As one example, *Hubble* has devoted extensive resources to probing the high-redshift universe through deep-imaging surveys on a variety of scales, from the Hubble Deep Field and the Ultra Deep Field through the

Great Observatory Origins Deep Survey and the Cosmic Evolution Survey. There is little question that complementary and supplementary programs using WFC3 will be proposed in Cycle 17.

In another example, the panchromatic capabilities of WFC3 and ACS offer the potential of mapping the star-formation properties in nearby galaxies (such as M33), perhaps coupled with metallicity and kinematic analyses using observations by COS and STIS.

As yet another—STIS, COS, and perhaps even the FGS might feature strongly in concerted investigations of the characteristics of transiting (and non-transiting) extrasolar planets.

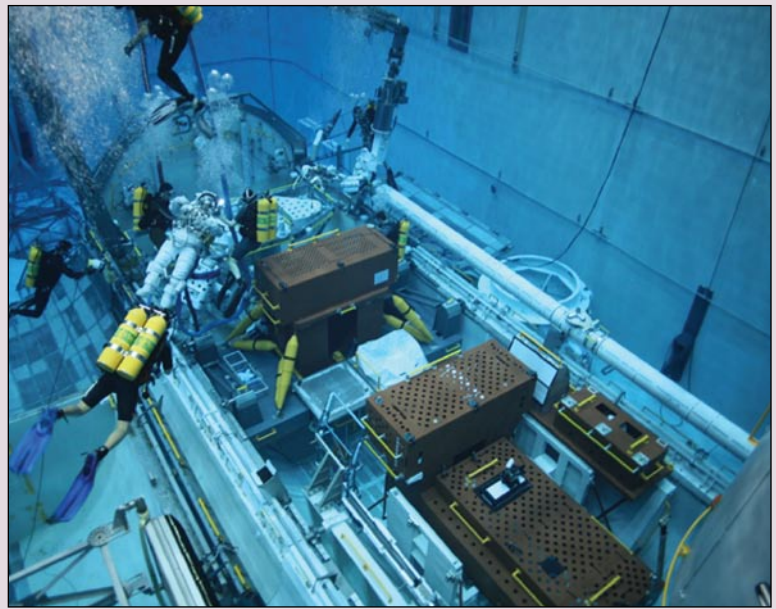
These are just some areas that might profit from very large allocations of *Hubble* time. In order to assess the appetite of the community for such programs, we are soliciting white papers that describe projects in this category. This solicitation in no way pre-selects or restricts the science topics. You may submit ideas for any combination of imaging and spectroscopy.

If you are opposed to the establishment of this type of program, you may also submit a white paper outlining your concerns. For example, you could describe the science that you envision being adversely impacted, or advocate a greater overall allocation to small and medium programs.

If, and only if, we find really compelling ideas for a new Multi-Cycle Treasury (MCT) program, we anticipate allocating 2,000 orbits—distributed over the last few months of Cycle 17 (150 to 200 orbits) and through Cycles 18 and 19—to this category. Up to 600 orbits would be

subsidized from director's discretionary time. The remaining orbits (up to 1200) would be taken from the General Observer allocations in Cycles 18 and 19, drawn predominantly from the time currently set aside for large and Treasury programs. MCT programs should, therefore, have relatively little impact on the number of small and medium programs allocated in those cycles, and there will still be an opportunity to apply for standard large and Treasury programs.

By this time next year, if all goes well, we will be entering a new era of space science capabilities with the post-SM4 *Hubble*. We are looking to the science community to make this a new era of discovery.  $\Omega$



**Figure 1:** Astronauts training to fix The Space Telescope Imaging Spectrograph (STIS) in the Neutral Buoyancy Laboratory (NBL).