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Subject: Large Facilities Projects Monthly Report for September 2006
(LIGO)
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Subject: LIGO End of September 2006 Highlights

Reference: LIGO-M060306-00-P

Recognition

Professor Gabriela Gonzalez has been awarded the 2007 Edward A. Bouchet Award sponsored by a grant from the Research Corporation. The Award was established to promote the participation of under-represented minorities in physics by identifying and recognizing a distinguished minority physicist who has made significant contributions to physics research. The citation that will appear on the certificate reads as follows: "For her significant impact on the field of gravitation wave physics through her many important technical and scientific contributions to the Laser Interferometric Gravitation Wave Observatory (LIGO) and for communicating the excitement of this field to the scientific community and the public." The Bouchet Award will be presented at the APS April 2007 meeting in Jacksonville, FL, at a special ceremonial session. It is customary for the Prize recipient to give an invited talk at the meeting where the Prize is presented, preferably on the work for which the Prize is being awarded.

Professor Rainer Weiss and Professor Ron Drever have been awarded the APS 2007 Einstein Prize supported by the Topical Group on Gravitation. The citation which will appear on the certificate reads: "For fundamental contributions to the development of gravitational-wave detectors based on optical interferometry, leading to the successful operation of the Laser Interferometer Gravitational-Wave Observatory." The Einstein Prize will be presented at the APS April 2007 meeting in Jacksonville, FL. The announcement will appear in the March 2007 issue of the APS News. For more information on the prize please go to the following website: http://www.aps.org/praw/einstein/index.cfm

International Collaboration

The MOU with Virgo is under review by Virgo/EGO. LIGO expects the process to converge towards a final MOU in the near future. At the same time, the technical details of collaboration are being defined in an Attachment. The Attachment is being reviewed jointly by both the Virgo and LIGO data analysis working group chairs. Consensus on most issues has been achieved and, once again, LIGO hopes to complete negotiations in the near future. This will

enable members of both collaborations to share in day-to-day research activities, thereby accelerating the process of joint data analysis.

S5 Science Run

We began the first long LIGO Science Run (S5) in November 2005 at sensitivities over most frequencies equal to our target in the science requirements document (SRD). Our goal is to accumulate one full-integrated year of data at the design sensitivity. S5 is expected to last 18 months with minor interruptions for maintenance and improvements. Through the end of September, LIGO has recorded over 175 24-hour days integrated science data in coincidence between the two observatories (H1 and L1 or H2 and L1).

All three interferometers continue to exhibit excellent sensitivity. The typical reach of the two four-kilometer interferometers for a 1.4 solar mass binary neutron star inspiral event continues to be approximately 14 Megaparsecs (Mpc). The Livinigston interferometer (L1) previously reported best sensitivities approaching 15 Mpc. This month a comparison of Hanford four-kilometer (H1) and two- kilometer (H2) interferometer noise sources led us to filter modifications that improved the best sensitivity for H1 out to 15 Mpc. The Hanford two-kilometer interferometer continues to operate at a reach of 6 to7 Mpc.

Since the inception of S5, the Hanford four-kilometer interferometer has a cumulative operating duty factor of 73.4 percent (87.2 percent in September). The Hanford two-kilometer interferometer is at 79.9 percent (86.8 percent in September).

The cumulative Livingston four-kilometer interferometer operating duty factor is 60.4 percent (73.4 percent in September). In Livingston we are still impaired during the day by some nearby logging activity, and microseism was high at times during the month due to Atlantic storms. This has made operation at high power prone to glitching and poor duty factors.

The cumulative duty factor for coincidence between the sites (either or both Hanford interferometers coincident with the Livingston four- kilometer interferometer) is 54.1 percent.

LIGO Enhancements

In discussions with the Laser Zentrum Hannover (LZH) Albert Einstein Institut (AEI) we have apportioned all of the work involved in testing the new laser systems and integrating them into our observatory infrastructure. The projected schedule looks to be sufficiently aggressive that delivery of the lasers should occur well ahead of when they will be needed at the observatories.

Science Education Center at Livingston

Installation has started on the outdoor wall exhibit for the Livingston Science Education Center (SEC). There are still some parts to be received, but installation should be completed by the end of October.

Planning continues for the opening ceremonies scheduled November 13, 2006.