Live webcasts from gravitational wave observatories around the world: April 3 – 4, 2009

AIGO, GEO600, LIGO, TAMA and Virgo participate in ESO´s "Around the World in 80 Telescopes"

"Around the World in 80 Telescopes" is a live 24-hour webcast organized by the European Southern Observatory (ESO) as part of "100 hours of Astronomy" celebrations to mark the International Year of Astronomy 2009. This unique webcast will visit, by night and by day, some of the most advanced astronomical observatories around the globe - including the worldwide network of gravitational wave observatories and AIGO the Australian prototype gravitational wave detector. With these giant laser interferometers, researchers monitor the universe in the unique spectrum of gravitational waves - for the first time, they are "listening" to the universe and will discover unknown and distant regions. By observing gravitational waves – tiny ripples in space-time – we will gain unique insights into black holes, neutron stars and the Big Bang.

During the webcast on-site researchers at each gravitational wave observatory will explain how they are listening to the universe and introduce you to the very sophisticated technology that is needed to measure tiny gravitational wave signals: vacuum tubes, high powered lasers, mirror suspensions, absorption free optics, laser stabilization, noise reduction etc.

The webcast: 3 April 2009, 9:00 UT (Universal Time/GMT) to 4 April 2009, 09:00 UT
http://www.100hoursofastronomy.org/program/75-live-24-hour-research-observatory-webcast

Stations of the tour through gravitational wave observatories and further information:
GEO600: April 3rd, 12:20 UT, British-German project near Hanover, Germany.
http://100hoursofastronomy.org/program/index.php?option=com_content&view=article&id=149

Virgo: April 3rd, 16:20 UT, Dutch-French-Italian Virgo project near Pisa, Italy.
http://100hoursofastronomy.org/program/index.php?option=com_content&view=article&id=164

LIGO: April 3rd, 20:00 UT, US project in Hanford/Washington and Livingston/Louisiana.
http://100hoursofastronomy.org/program/index.php?option=com_content&view=article&id=175

AIGO: April 4, 01:20 UT, Australian project in Gingin.
http://100hoursofastronomy.org/program/index.php?option=com_content&view=article&id=202

TAMA: April 4, 06:00 UT, Japanese project in Tokyo.
http://100hoursofastronomy.org/program/index.php?option=com_content&view=article&id=192

"Around the World in 80 Telescopes" is organised by ESO, the European Southern Observatory, from its HQ in Garching, Germany.

Further information:
For AIGO: David Blair, Tel.: +61 409687703, Haixing Miao Tel.: +61 895757591, dgb@cyllene.uwa.edu.au
For GEO600: Susanne Milde, Tel.: +49 (0)331 583 93 55, milde@mildemarketing.de
For LIGO: Kathy Svitil, Tel.: +1 (0) 626 395-8022, ksvitil@caltech.edu
For Virgo/EGO: Carlo Bradaschia, Tel.: +39 339 6722355, carlo.bradaschia@pi.infn.it
For TAMA: Koji Arai, Tel.: +81 422 34 3662, koji.arai@nao.ac.jp

Background information

Gravitational waves

Gravitational waves are ripples in the fabric of space and time produced by violent events in the distant universe, for example by the collision of two black holes or by the cores of supernova explosions. Gravitational waves are emitted by accelerating masses much in the same way as radio waves are produced by accelerating charges – for example, such as electrons in antennas. These ripples in the space-time fabric travel to Earth, bringing with them information about their violent origins and about the nature of gravity that cannot be obtained by other astronomical tools.

Albert Einstein predicted the existence of these gravitational waves in 1916 in his general theory of relativity, but only since the 1990s has technology become powerful enough to permit detecting them and harnessing them for science. Although they have not yet been detected directly, the influence of gravitational waves on a binary pulsar system (two neutron stars orbiting each other) has been measured accurately and is in excellent agreement with the predictions. Scientists therefore have great confidence that gravitational waves exist. But a direct detection will confirm Einstein's vision of the waves, and allow a fascinating and unique view of cataclysms in the cosmos.

GEO600

GEO 600 has gained an excellent worldwide reputation because of its innovative and reliable technology and is considered a think-tank for international gravitational wave observation. It was here that the most modern lasers in the world were developed which are being used in all the gravitational wave observatories in the world today. Researchers at GEO600 are taking technology a step further with 'squeezed vacuum'. This technology is designated for use in the third generation of gravitational wave detectors. GEO600 is a joint project of scientists of the Max Planck Institute for Gravitational Physics (Albert Einstein Institute, or AEI), Leibniz Universität Hannover, Cardiff University, the University of Glasgow and the University of Birmingham. It is funded jointly by the Max Planck Society (MPG) in Germany and the Science and Technology Facilities Council (STFC) in UK.