

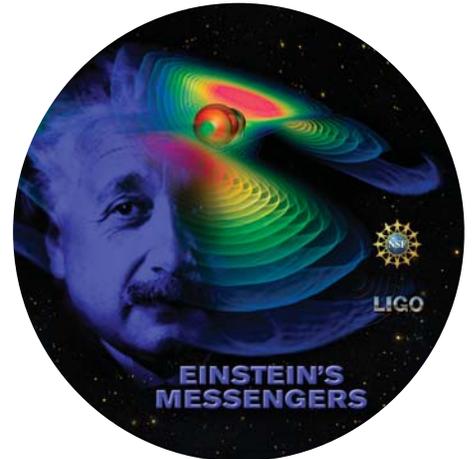


# *LIGO Hanford Observatory*

## *Education and Outreach*

### *Annual Summary*

*September 2006 - August 2007*



National Science Foundation  
WHERE DISCOVERIES BEGIN

# LIGO Hanford Observatory Outreach Mission

*LIGO Hanford Observatory seeks to impact the development of the Tri-Cities and the surrounding region by providing opportunities for lifelong learning, by promoting and developing science literacy and by building relationships with educational and community development organizations that will advance mutual interests.*

## LHO Local Educator Network

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Brock Wells  
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Robert Olds Junior High School  
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George Garlick  
Founder & Chairman  
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# *2006-2007 On-Site Activities*

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LHO expanded its program of public tours, public events and school field trips during 2006-2007. On-site visitor attendance increased by 15% over the previous year. LIGO's peak single-event attendance occurred on August 11 as roughly 450 community members converged at the Observatory to view the Perseid Meteor Shower.



Bilingual family days at LIGO in October 2007 and July 2007 provided opportunities for families from the Pasco and Yakima regions to tour the site, experiment with physics exhibits and view a liquid nitrogen presentation in Spanish and English.

On-site and off-site outreach events continue to occur as the result of organizational partnerships.



# Off-Site Activities

LHO participated in 4300 outreach contacts through off-site activities in 2006-2007, an increase of over 50% from the previous year. Most of this growth came through an increase in the number of visits to school sites. Eighteen school visits provided an average of 130 student contacts per visit.



LitFest 2007, produced by Columbia Basin College and the Mid-Columbia Library Foundation, asked LIGO to host a program in the LitFest schedule for the second consecutive year. LHO Head Fred Raab and a panel of distinguished community members led a discussion Thomas Friedman's *The World is Flat* on the CBC campus.



# Teacher Training

Educational Service District 123 invited LIGO, WSU Tri-Cities, Columbia Basin College, Pasco School District and Othello School District to partner on a 2007 Math Science Partnership proposal to the Office of the Superintendent of Public Instruction. OSPI's decision to fund the proposal has resulted in an expansion of the WSU-TC/LIGO graduate course for teachers that LHO has hosted during the three previous summers. Under the MSP program, an average of 27 teachers per year, coming from grade 4 through grade 8 classrooms in Pasco and Othello, will receive support to take the summer graduate course and participate in four follow-up workshops during the following school year. The grant program will span three years.



Teachers in the MSP program will improve their instructional skills related to scientific inquiry and will gain additional knowledge of the science content that lies behind Washington's Grade Level Expectations (GLE's) in science. Leaders in the delivery of the MSP program are faculty members Judy Morrison from WSU-TC and Todd Rogers from CBC, LHO Head Fred Raab and EOC Dale Ingram, and staff members from ESD 123.



# Internships

LHO welcomed Columbia Basin College engineering students Antonio Trevino and Guillermo Rodriguez to the Observatory for internships during the summer of 2007. These two students will continue to intern at LHO during the 2007-08 school year under schedules that will accommodate their coursework.

These internships include components of science research along with involvement in LHO's outreach program. CBC interns will participate in the hosting of field trips and public events and will work on the development of new exhibits and activities. Their language and cultural skills will improve LIGO's outreach to the region's growing Hispanic population.



Grant funds from the National Science Foundation now make LIGO teacher interns part of the nationwide "Research Experience for Teachers (RET)" program. Three area teachers served six-week terms at LHO during the summer of 2007. These individuals worked on science research and curricular materials that will provide stronger classroom connections to LIGO science and to physical science GLE's.



# *Multicultural Emphasis*



LHO continues to host periodic bilingual public events. A parallel effort seeks to increase LHO's inventory of dual-language educational materials. The Observatory's field trip guide for students can now be accessed in Spanish and English. LHO has developed a kit for after-school child care facilities that provides a number of hands-on experiences with simple physics gadgets. LHO student interns from CBC have translated the teacher's guide for the kit into Spanish. Two copies of the kit are now part of the circulating inventory of materials that are managed by WSU Extension.



LHO Head Fred Raab will lead an internal LIGO committee that will seek to advance LIGO's diversity profile over the coming years.

# Partnerships Continue to Grow

TechREACH, a program based at the Puget Sound Center for Teaching, Learning and Technology, now collaborates with Yakima Valley/Tri-Cities MESA to offer mentoring via e-mail, in-school science interest clubs and special interest summer programs to middle schools in the Tri-Cities and lower Yakima Valley. A number of LHO staff members served as TechREACH mentors in 2007. TechREACH held its 2006-2007 kickoff events for students and their mentors at LHO in January of 2007.

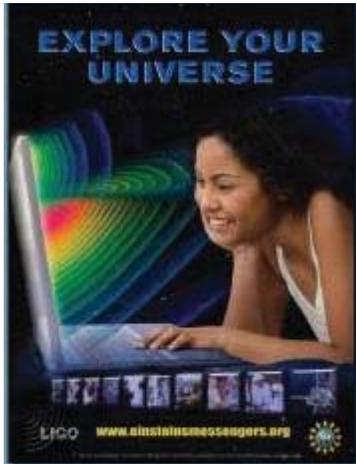


Collaborative work with GEAR UP expanded in 2007 to include off-site visits to schools in north-central Washington that are part of a GU grant at Central Washington University. WSU GEAR UP, Pioneer Middle School in Walla Walla and LIGO worked together on "Space and Technology Boot Camp," a two-week summer program for Pioneer students that culminated with students displaying a variety of projects at LHO during a closing field trip to the Observatory



ESD 123 emerged as a powerful partner for LIGO in 2007, involving LIGO in a Math Science Partnership grant (see page 5), inviting LIGO's support on a 21st-Century School proposal, connecting LHO to early childhood outreach, facilitating the delivery of clock hours for teacher workshops, and improving LIGO's visibility in the school districts that the ESD serves.

# *Educational Materials and Programs*



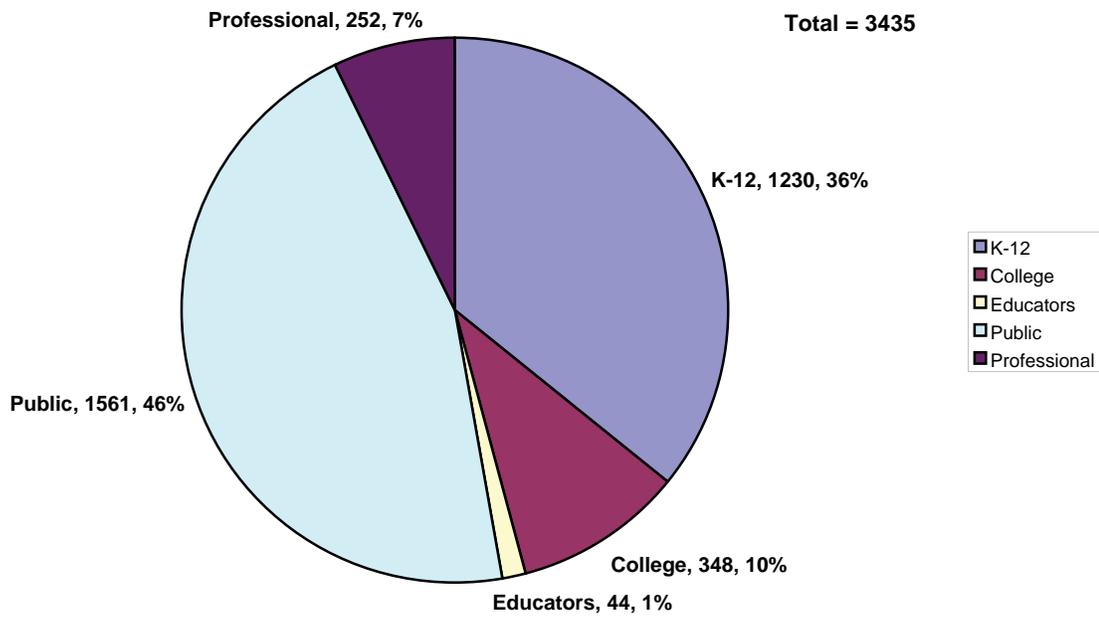
LIGO has completed the development of the teacher resource package for *Einstein's Messengers*, the NSF movie that tells the story of LIGO. The Einstein's Messengers Web site provides teachers with study guides and classroom activities, correlated to science standards, that amplify the value of the movie for classroom instruction. A wall poster for classroom use, now ready for distribution, completes the teacher support materials that were funded by the NSF.

Interactions in Understanding the Universe (I2U2) is the national collaboration that offers students and teachers access to data sets from front-line science projects over the Web. LIGO's Electronic Laboratory (E-lab) will become available to schools in late 2007, providing opportunities for students to build research projects by analyzing data from seismometers and other sensors at the LHO site. Nearly 300 area students sampled the test-version LIGO E-Lab in 2007.

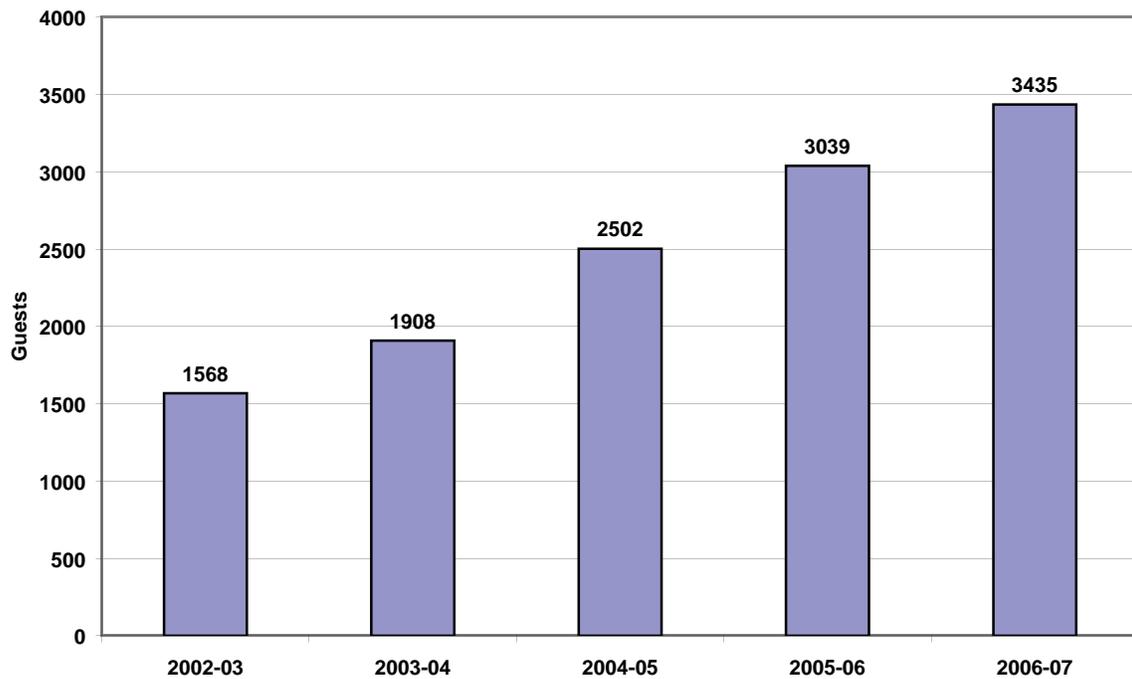


# Outreach Data

2006-07 LHO Visitor Count



LHO Annual On-site Outreach Attendance, 2002-07



# Recognition

LIGO received a 2007 Science Education Advocate Award from Washington Leadership and Assistance for Science Education Reform (WA LASER). LIGO was nominated by WSU Tri-Cities Professor Judy Morrison.



Educational Service District 123 nominated LIGO to receive a 2007 Community Leadership Award, presented by the Southeastern Washington Association of School District Administrators.

# A Look Ahead...

The new LIGO Science Education Center, located at the LIGO Livingston site, has become a key science outreach asset in the Louisiana region. LHO is exploring the partnerships and capabilities that would be needed for the development of such a center here in the Columbia Basin.





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