



Education and Public Outreach at the LIGO Science Education Center, Livingston, Louisiana

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Overview

- LIGO Science Education Center (Livingston, LA)
 - » Mission
 - » Unique Collaboration
 - » Student Field Trips
 - » Teacher Professional Development
 - » Public Tours and Open Houses
 - » Docents
 - » Educational Research





Mission and Structure

Leverage the scale, technology and science backdrop of the Observatories to create rich visitor experiences:



- » Student field trips integrate hands-on standards-based activities with explorations of LIGO science and technology.
- » Teacher professional development programs emphasize science inquiry along with key LIGO science concepts.
- » Programs for the general public address a variety of interests and ages.
- » Outreach programs are built on partnerships.

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LIGO Science Education Center (SEC)

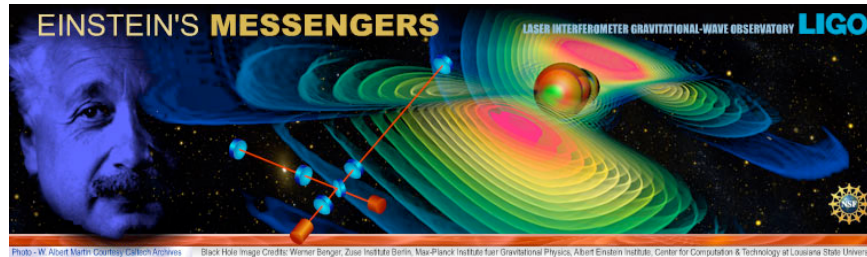
- First class outreach program compliments LIGO as an NSF major facility
- Built on a partnership with the Exploratorium, SUBR, LaSIP and La GEAR UP
- Informal learning environment housing 50 hands-on exhibits focusing on LIGO science, all but ~10 made by the Exploratorium
- Exposes students, teachers and the public to LIGO concepts and scientists while being a platform for educational research





Student Field Trips

- Teachers prepare students for their visit by showing them the “Einstein’s Messengers” documentary in class.



- During their visit, perform a hands-on classroom activity, tour the facility (including the control room) and Q&A with a scientist and explore the exhibit hall.
 - » Programs are designed to address specific LA Grade Level Expectations (GLEs) and the LA Comprehensive Curriculum.
- Between January 2008-January 2009, 4448 students were reached by the SEC.



Teacher Professional Development

- Professional development (PD) immerses teachers in inquiry based teaching methods of LIGO concepts.
 - » Teachers come to the SEC with PD programs run by universities or local school districts.
- A typical program includes viewing “Einstein’s Messengers,” facility tour and Q&A with a scientist, hands-on activities dealing with LIGO science, and discussion on how to use these activities in the classroom using ‘snacks.’
 - » Programs target specific GLEs and the Comprehensive Curriculum.
- Between Jan. 2008-Jan. 2009, the SEC has conducted 676 PD days.

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Public Tours and Open Houses



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- LIGO welcomes public visitors through reserved tours and open houses.
- These tours showcase the frontier science going on in their ‘backyard’ and the potential it has to see and understand the universe in a new way.
- A typical tour includes a viewing of “Einstein’s Messengers,” a facility tour and Q&A with a scientist, and time to explore the exhibit hall.
- Between Jan. 2008 - Jan. 2009, the SEC has hosted upwards of 600 public visitors.



Docents



- In cooperation with Southern University - Baton Rouge, undergraduate students in STEM and education majors are trained and serve as docents explaining exhibits to visitors.
- Docents are trained on the SUBR campus in their local “Inquiry Laboratory” (complete with 6 exhibits) as well as on-site at the SEC.
- Docents represent a step in the pathway to being a scientist and serve as role models to students from underrepresented groups in the STEM fields.
- 2 cohorts of docents have completed training (cohort 1: 14, cohort 2: 16) and 15 students have begun training in cohort 3.





Educational Research

- Work thus far focuses on students' attitudes toward science, the people who do science, its utility, its process and personal interest.
- Results show a marked increase in students' personal interest in science and their views of science and scientists.
- This and similar work is done in cooperation with a Tulane psychology faculty member, Dr. Lisa Szechter, and has resulted in:
 - » 1 MS thesis
 - » 1 BS honors thesis
 - » Several scholarly papers and presentations





SEC Next Phase

- Create a 'continuum of engagement' with students and teachers (in large and small school systems and school systems of varying performance) through repeated encounters.
- Use these repeated encounters perform in-depth studies into effective teaching and learning methods.
- These longitudinal studies benefit all parties: students, teachers, researchers and the public.





Summary

- The SEC as created a national model for how universities, research labs, state and local educational agencies, and informal learning centers can work together to motivate student and teacher learning, and to support inquiry-based teaching and learning practices.

