



# California Institute of Technology

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## NEWS RELEASE

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## **Inaugural Ceremonies for the New LIGO Science Education Center**

*“I enjoyed so much coming to LIGO. I loved learning all the awesome stuff like space-time and how the warp tells the object where to go! I also liked playing with all those cool experiments. Thank you so much for taking up your time to teach us about science. (P.S. I can’t wait to come back in spring!)”*

*--Middle school student – Livingston Parish, Louisiana*

Livingston, LA—Question: How do you excite and teach children about advanced physics concepts such as bending the fabric of space-time? Answer: You start by giving them a net, some balls, a cardboard box, and other ordinary items that can create a model of space they can touch, hold, and play with.

That’s how the new Laser Interferometer Gravitational-Wave Observatory (LIGO) Science Education Center in Livingston, Louisiana will be providing science lessons to local K-12 students.

The official opening ceremony for this hands-on science education facility, and a symposium featuring prominent education, science, government, and community leaders, will be held on Monday, November 13. Attendance at the event is by invitation only, but members of the media are welcome.

The symposium, “Partnerships to Advance Science Education,” will highlight and explore the unique approach taken by LIGO and its partners toward improving student achievement, teacher training, and public awareness of science. Discussions will begin at 9 a.m., and will culminate with tours of the new facility at 1 p.m. Opening ceremonies for the new science center will commence at 3 p.m. and conclude at 4:45 p.m.

Fully operational since 2001 and funded by the U.S. National Science Foundation, LIGO is a scientific facility for the detection of astrophysical gravitational waves for the purpose of better understanding the unseen universe. LIGO was designed and is managed by the California

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Institute of Technology and the Massachusetts Institute of Technology, and operates twin facilities located in Livingston Parish and in Hanford, Washington. Research is conducted by the LIGO Scientific Collaboration, comprising some 500 scientists at more than 40 universities and institutes around the United States and in eight foreign countries.

The founding partners in the new LIGO Science Education Center are Caltech, Southern University at Baton Rouge, Louisiana Systemic Initiative/Louisiana Gaining Early Awareness and Readiness for Undergraduate Programs (LaSIP/LA GEAR-UP), and the Exploratorium of San Francisco.

“Expanding young minds and promoting interest in science education are primary goals of the new LIGO Science Education Center,” says Jay Marx, LIGO executive director. “We expect the center’s contributions to science education and teacher training to have a significant impact in Louisiana and beyond, and that the center will become a vital national model for improving science education.”

Education and outreach program leader John Thacker says, “The center will feature enlightening, fun, interactive exhibits that will enable students and the general public to understand important scientific principles, using LIGO to illustrate these principles. The center will also serve as an important regional resource for teacher professional training and development.”

The objectives of the LIGO Science Education Center are to communicate LIGO-related science concepts to the public; to strengthen in-service and pre-service science and mathematics teacher skills and abilities; and to enhance the science and mathematics abilities of a broad audience of students in Louisiana and surrounding regions.

Searching for the gravitational waves predicted in Einstein’s general theory of relativity is just one of the many things that students will learn about at the LIGO Science Education Center. The new center will feature more than 40 hands-on, interactive exhibits for students, teachers, and the public. The science of LIGO, including the investigation of black holes and the warping of space-time, will be explored, as will the cutting-edge engineering and technology at the heart of these exquisitely sensitive scientific instruments. Opportunities to observe and interact with working scientists and engineers, and tours of the actual LIGO observatory control room, will be offered.

To place key concepts in contexts familiar to teachers and curriculum planners, the center focuses on eight scientific and technological themes: light, interference, gravity, oscillations, waves, resonance, feedback, and astronomy. Program offerings, teacher guides, and classroom activities help tie these concepts to science and mathematics curriculum goals for each grade level.

Before entering the science center, visitors will encounter the Kinetic Pendulum Wall—a giant moving sculpture, designed by artists at the San Francisco Exploratorium, which is activated by the wind or can be manipulated by guests. Visitors will walk under this magnetically coupled wave machine, more than 30-feet high, suspended along the 85-foot-long building facade. The exhibit masts will swing just overhead above the walkway. In this signature exhibit, many of the themes of the center—wave motion and propagation, gravity, resonance, and light—will all be

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in action, as will the underlying philosophy of experiment: revealing the invisible with scientific instruments.

Once inside, featured exhibits include the “Giant Slinky,” where children can sprawl under or run relay races alongside a huge spring as classmates jiggle the ends to illustrate transverse, longitudinal, and standing wave phenomena. The “Gravity’s Rainbow” exhibit lets kids explore gravity’s effect on trajectories and allows visitors to relate the concepts of velocity, acceleration, kinetic energy, and distance. At the “Gravity Well” exhibit, visitors can perform a simulation of falling into a black hole. The “Visible Effects of the Invisible” exhibit demonstrates to visitors how intense sound waves can be “seen” by letting them disrupt a liquid surface.

One unique feature of the center’s educational programs and supplemental resource materials is the focus on teacher training; about 50 percent of center activities will support in-service and pre-service educator professional development. The center is also open to schools and organizations for interactive field trips, and will offer weekly programs for the general public. Since LIGO is an active scientific research facility, reservations are required. There is no cost for admission.

A robust \$5 million, five-year NSF award created the LIGO Science Education Center initiative as a unique partnership between the informal-learning, formal-education and basic-science communities. Under this award, the Exploratorium of San Francisco designed and built the interactive exhibits, many customized in collaboration with LIGO scientists and engineers to highlight LIGO concepts. Southern University and A&M College at Baton Rouge is the formal education partner and will provide pre-service teacher professional development, as well as supporting initial center operation through its docent/trainee program. LaSIP/LA GEAR-UP, the Louisiana agency charged with statewide educational reform, will provide funding and organizational support for in-service teacher professional development. The LIGO laboratory designed and constructed the center facilities under this grant and provides its scientific program content, management, and direction. LIGO will continue to operate, manage, and staff the Science Education Center facility and conduct its core program under its preexisting NSF cooperative agreement, as an integral part of its research mission.

The LIGO Science Education Center is located at the observatory site at 19100 LIGO Lane, Livingston, LA 70754. For reservations and for further information on the center and the opening ceremonies, contact John Thacker at (225) 686-3113 or [jthacker@ligo-la.caltech.edu](mailto:jthacker@ligo-la.caltech.edu). To visit the Science Education Center on the web, go to <http://www.ligo-la.caltech.edu/contents/sechome.htm>.

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