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# Gravitational Waves from the Ground Up

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LIGO Livingston Observatory



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# LIGO

- NSF large facility seeking to directly detect gravitational waves (GW) originating from massive, energetic events in the universe.
- Two facilities:

Hanford, WA



Livingston, LA



- Along with detection, education is one of LIGO's central goals.



# LIGO Science Education Center (SEC)

- First class outreach program complements LIGO as an NSF large 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





# 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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# Inquiry Based Activities

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- Classroom Activities

- » Hands-on, staff member facilitated inquiry activities are available
- » Most focus on light and wave properties (e.g. interference, refraction, etc.) with a few on gravity (e.g. gravity blanket)

- Exhibit Hall Exploration

- » About 45 minutes is allotted for free exploration of the hands-on exhibits housed in the SEC.
- » Students are given 4 “rules” for their experience: **interact** with the exhibits, **learn** something, **share** something, and *have fun*.
- » A short exhibit demo is performed by a staff member not only to teach a targeted concept, but to show students that there are multiple ways to use the exhibits.

