



Astronomy's New Messengers

**A LIGO traveling exhibit to reach out to a
young adult audience**

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LIGO

Funded by the National Science Foundation.
Jointly operated by Caltech and MIT.

LIGO Scientific Collaboration

700+ people from 50+ institutions worldwide.

GEO600 part of LSC.

Collaborates/data sharing with Virgo.



LIGO Mission

Scientific: detect gravitational waves, explore the fundamental physics of gravity, and develop gravitational wave observations as a tool of astronomical discovery.

Social: inspire interest in astronomy and fundamental science and educate the broader community.



Objectives

Improve science education.

Strengthen the nation's commitment to fundamental research.

Educate, recruit, and retain top students and scientists.

Ensure the leading role of the US in innovation and scientific research.



Challenges

How to explain to the public:

The science of LIGO.

How LIGO operates.

Why projects like LIGO should be funded.



Opportunities

Grand scale of the LIGO interferometers

Innate public fascination with black holes
and other extreme astronomical phenomena

“Need for more science” across the US



Target audience

Informal learners.

Children 9-13 and adult caregivers.

Late adolescent and young adults.

High school and college students.



Learning Objectives

The Universe is a “tumultuous” place.

Distant Universe can be studied with non-electromagnetic means.

New “non-conventional” telescopes are needed to detect GRWs.

Cutting-edge technology of LIGO.



Astronomy's New Messengers: A LIGO Traveling Exhibit





Features

Professionally designed portable 200 sq. ft. installation (LHSA+DP, LSLP).

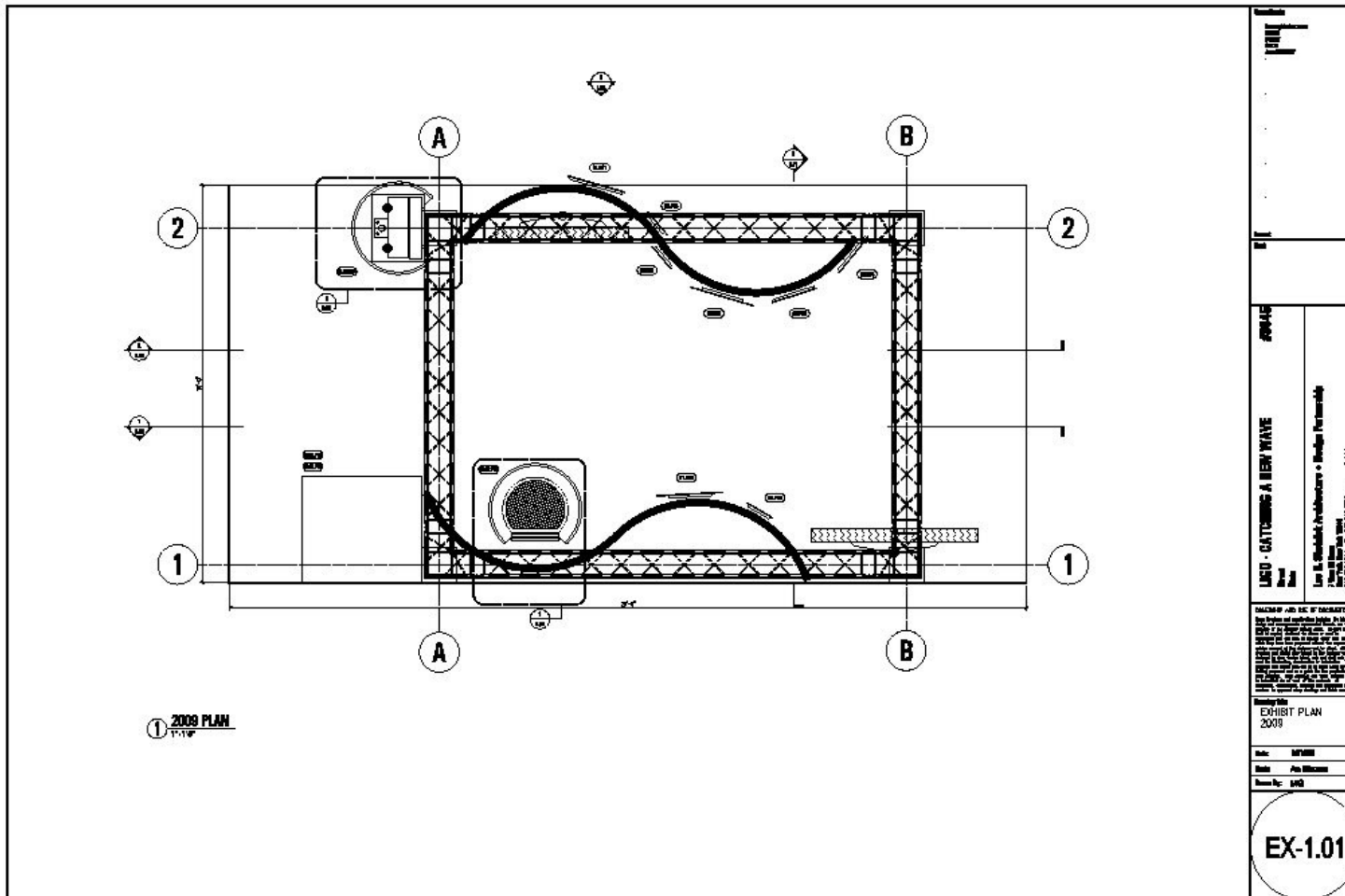
Eye-catching, high-tech.

Include possibilities for age-appropriate self-exploration.

Well-structured messaging system.



Floor plan





Components

LIGO

ASTRONOMY'S NEW MESSENGERS
listening to the universe with gravitational waves

Panels

INTERACTIVE rubber sheet

create your own spaceworld

Place the weights on the grid. Notice how the grid sags. Put the smaller ball across. How does the ball change the curvature of the sheet?

why two interferometers?

Two interferometers are now "in scope" for the LIGO project. A single interferometer is a good idea, but two are better. They can detect a signal from either side of the detector.

LIGO's location

The LIGO project is located near Hanford, CA and Livingston, LA.

Why two interferometers?

Two interferometers are better than one. They can detect a signal from either side of the detector.

A Michelson interferometer

A Michelson interferometer is a device that splits a beam of light into two paths and recombines them. It is used to measure the distance between two points.

A laser interferometer

A laser interferometer is a device that uses a laser beam to measure the distance between two points. It is used to measure the distance between two points.



LCD Screens





Rubber sheet



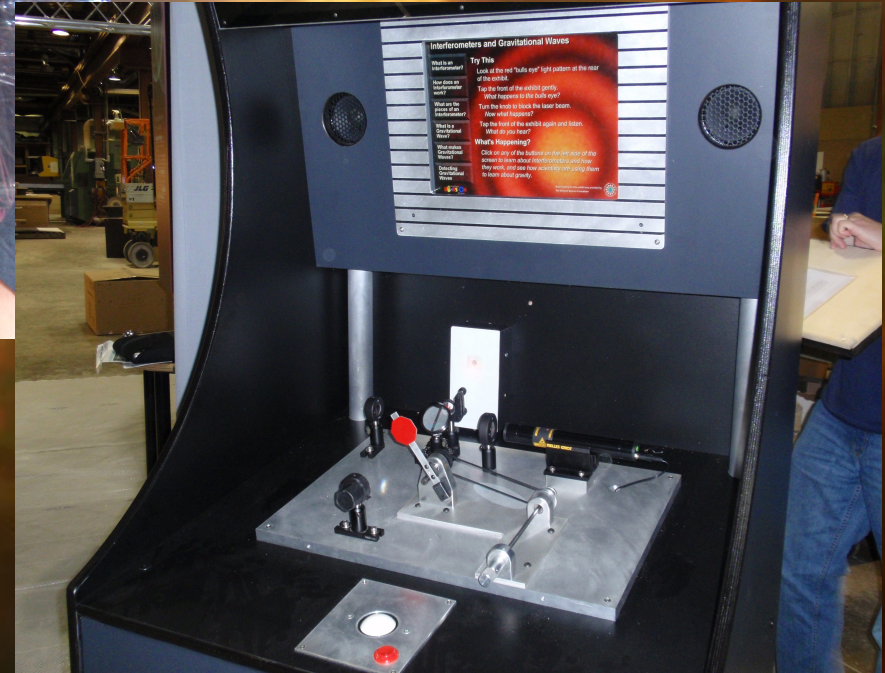


Black Hole Hunter Game





Interferometer





Travel Schedule

Debut at the 2009 NYC World Science Festival's Street Fair (June 14, 2009).

Adler Planetarium, Chicago (July-Aug. 2009).

Colleges and Universities in the South (August 2009 – Mar 2010).



Plans for 2010

Continuously staffed 1200 sq. ft. installation in prominent location in NYC.

Debut at the 2010 WSF as signature event.

Transfer to a permanent location in a public institution of science museum.

Innovative concept and design blending art and science.



2010 Large Scale Exhibit

