

Working group “exhibits”

Catia Peduto

Emma Sanders

History of this WG

- proposed in Lisbon (April 2017)
- questionnaire to understand, if IPPOG people want the WG
→ result: YES!
- first meeting here in Pisa

ippog-exhibits-wg@cern.ch

→ 17 participants ,
11 involved in some way in exhibit development

WG exhibits: decisions

Develop a platform for sharing exhibits (→ IPPOG resources database?)

Facilitate access to raw material for particle physics exhibitions for both the IPPOG community and beyond, including museums and science centres

Type of exhibits that can be shared:

- objects (heritage)
- files for multimedia games & immersive experiences
- plans for hands-on exhibits
- Experiments for science fairs/ shows
- Science and art installations (in some cases)

WG exhibits: from now on

Write mission statement for the future work of this group, the criteria for inclusion in the database, who is target, how to define best practice, the kind of tags that are needed.

Up for discussion:

Evolve to a steering group?

Curation – how is it done?

Enlarge group to include others working on exhibits?

Future evolution, stage 2 > theme future meetings to work on brainstorming exhibits (on accelerators, on dark matter, ... etc) and feedback to database content.

Update from CERN

Emma Sanders

microcosm



Major renovation in 2015/2016.
Content available for other exhibitions or
events (film, photos, animations, ...)

Future developments include

- video stories about components of LHC experiments on display
- Ideasquare workshop for blind, visually impaired

collaborations



London Science Museum, UK (2013-2017)

Steno Museum, Aarhus, Denmark (2018)

Museo della Scienza Milan, Italy (2016)

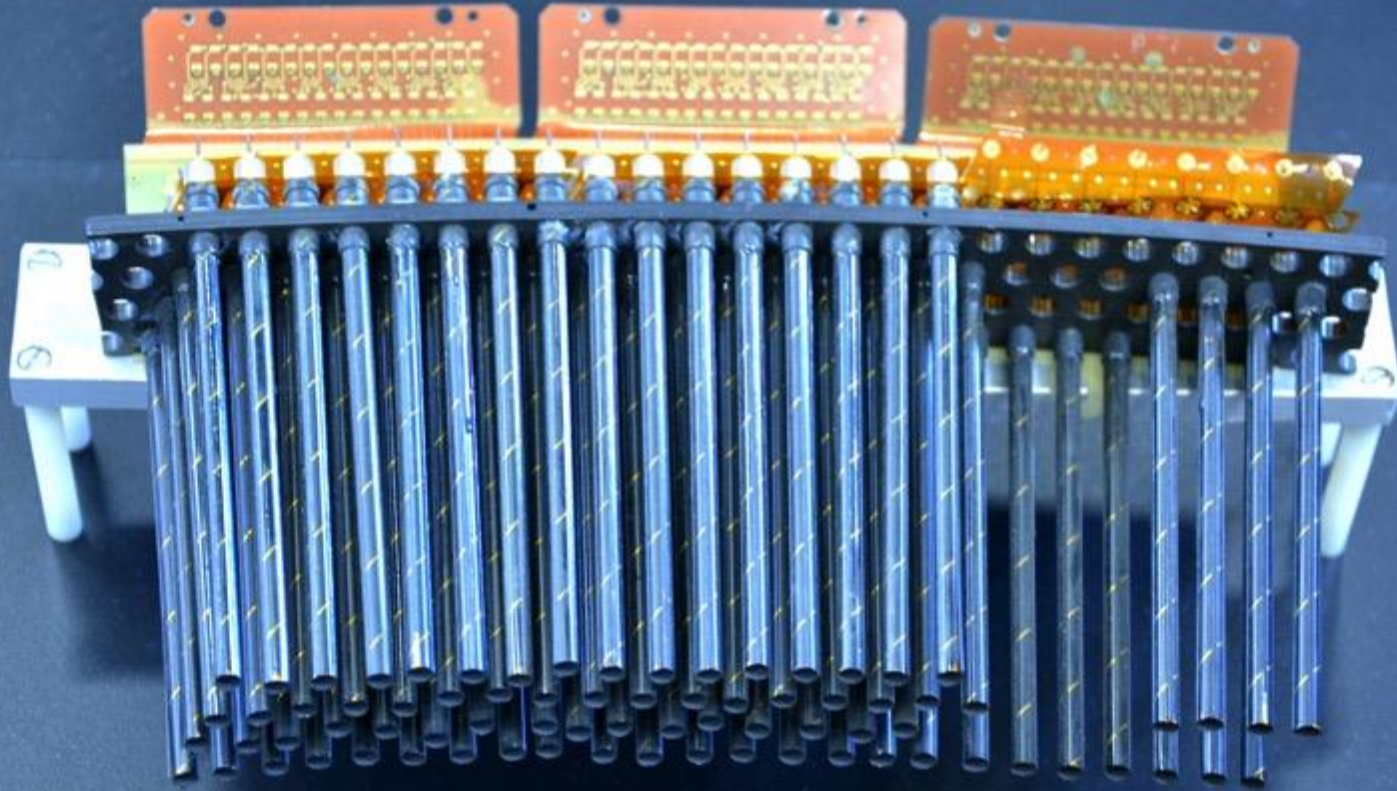
Spoletto Festival, Italy (2018)

Art Basel, Switzerland (2018)

LAPP, Annecy, France (2018/ 2019)

We provide: objects, contacts with scientists, drawings (3d), animations, photo + film

heritage object collection



Curated collection available for loan by museums or institutes developing exhibitions or organising events.

Actively searching for prototypes of LHC experiments and accompanying stories to add to the collection

science gateway



A move towards activities for younger audiences. Address decline in science aspirations occurring end primary, early secondary.

Project at CERN entrance, next to the Globe. In funding stage.

Update from INFN

Catia Peduto

MA XXI



GRAVITY
IMAGING THE UNIVERSE AFTER EINSTEIN
MAXXI, Rome

02.12.2017 / 06.05.2018

designed by Luigia Lonardelli (MAXXI), Tomas Saraceno (artist, Berlin) Vincenzo Napolano (INFN), Andrea Zanini (ASI)

Gravity. Imaging the Universe after Einstein

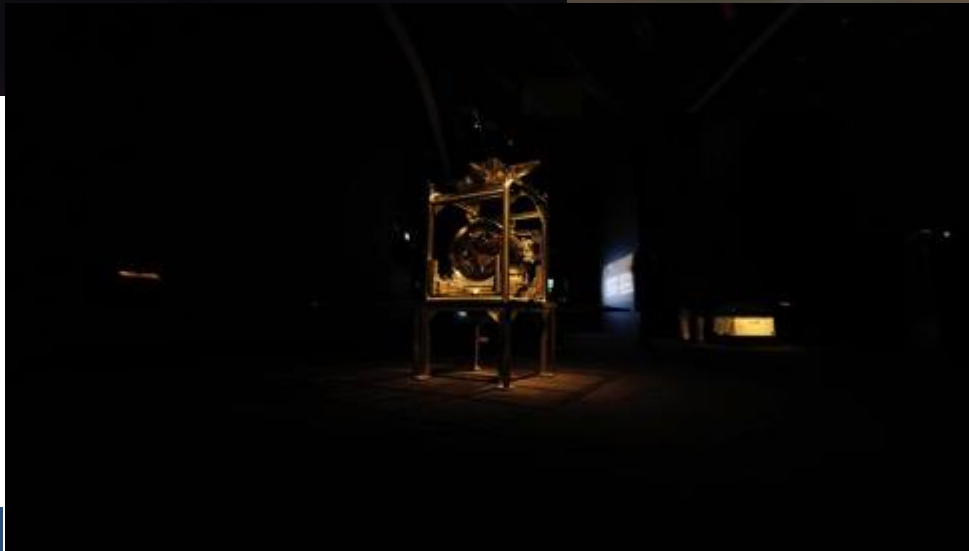
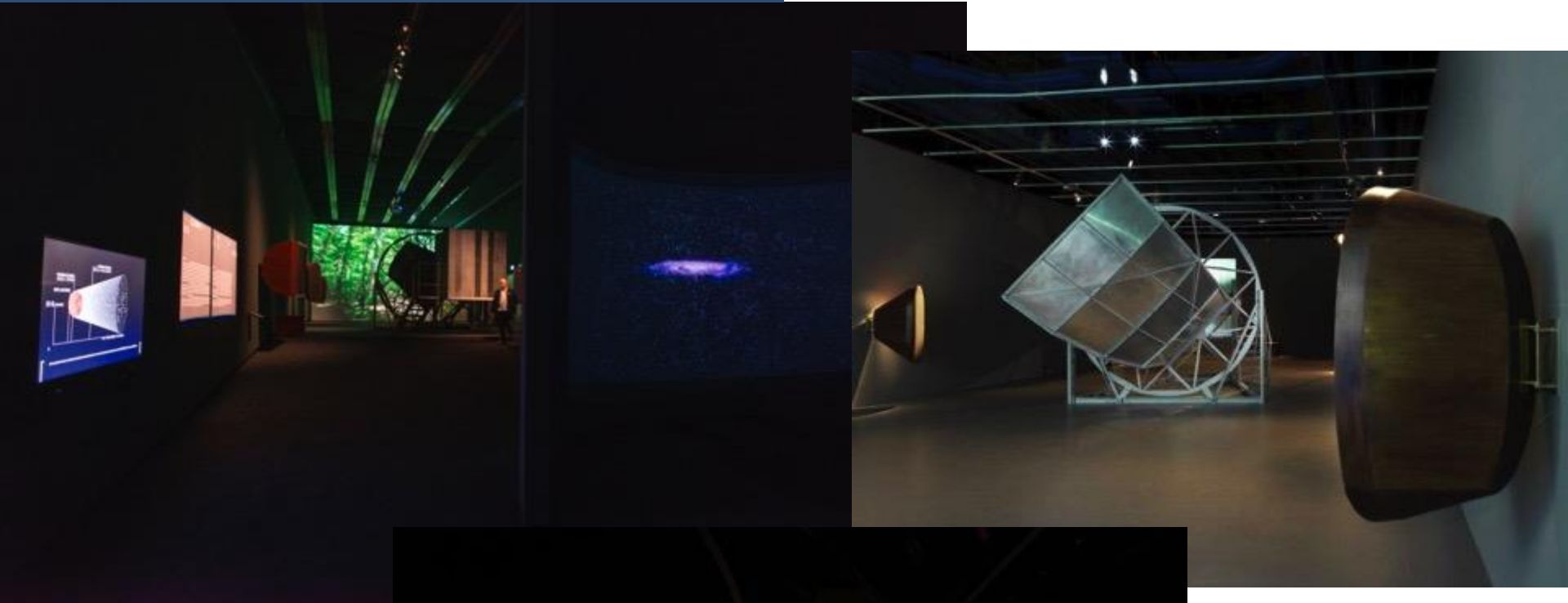
dialogue between science and art, by investigating connections and analogies

3 sections: spacetime – crisis - borders

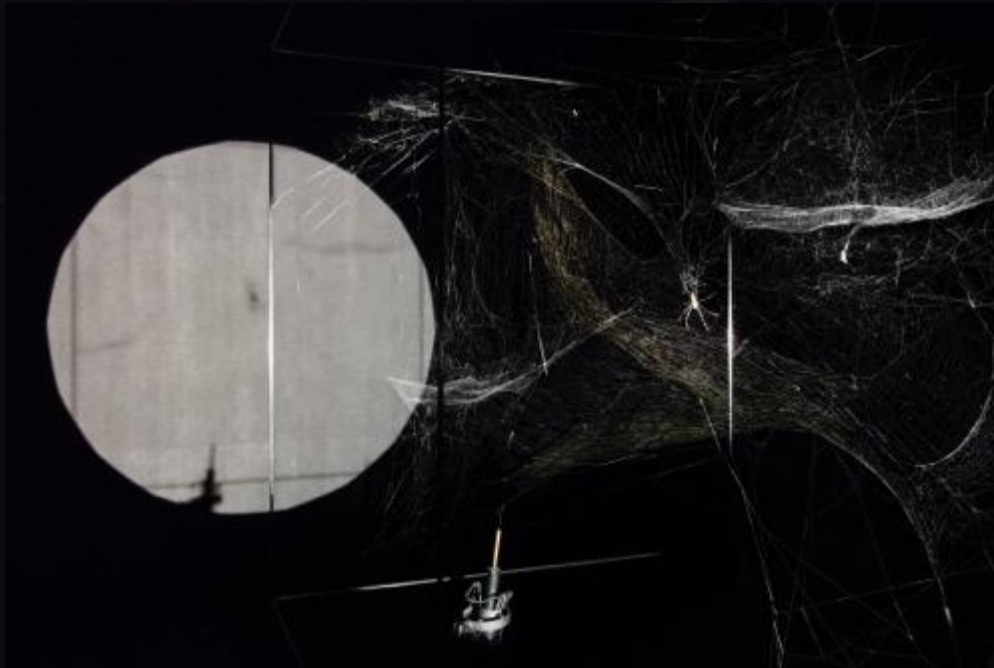
30.000 visitors in the first month

total cost 900k€ (INFN paid 300k€)

events, movies, laboratories for kids



General view



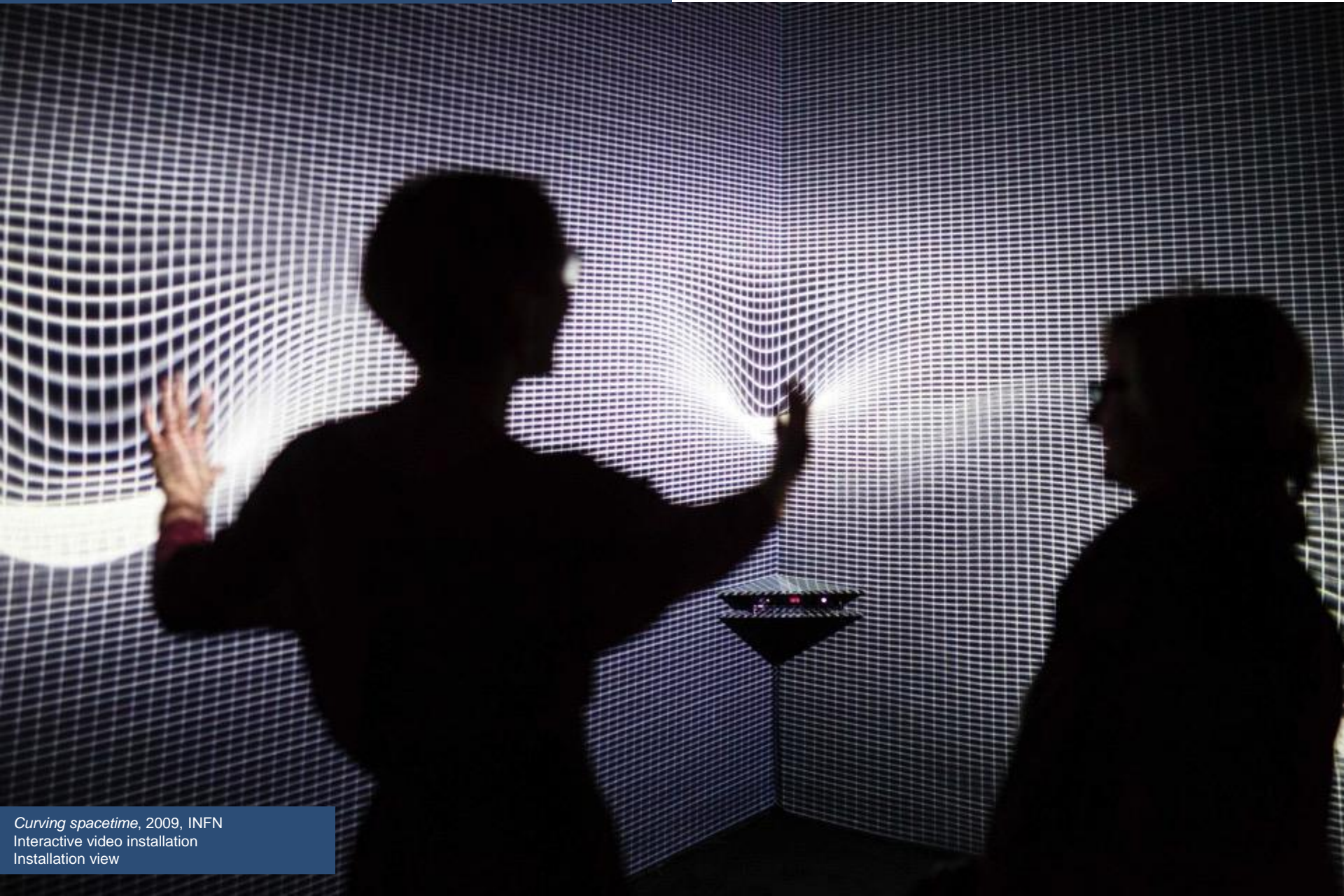
← special guest: a spider!

incorporates an interferometer that detects the spider movements:



Other art work from:

- Fischli and Weiss
- Duchamp
- Laurent Grasso
- Allora & Calzadilla



Curving spacetime, 2009, INFN
Interactive video installation
Installation view



Gravitational hole, INFN
Installation view



Dark matter, INFN
Installation view

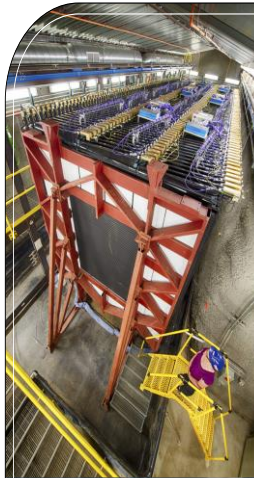
More informations (incl. a video):

<http://www.maxxi.art/en/events/gravity-luniverso-dopo-einstein/>

**Searching for locations abroad (contemporary art museums,
science museums or cultural centres)**

Update from Fermilab

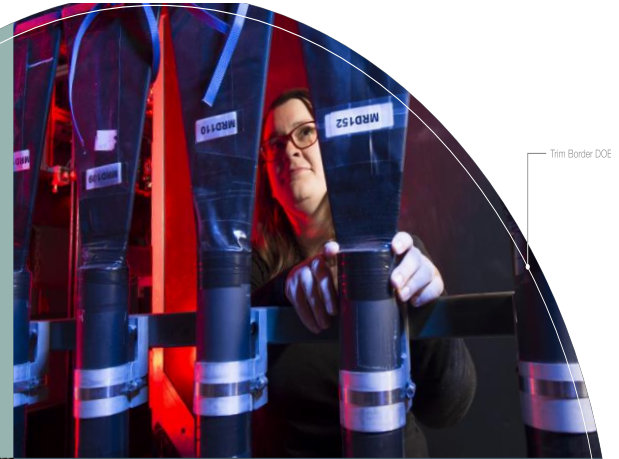
Spencer Pasero



Test Your Ideas Like a Physicist

Do neutrinos morph?

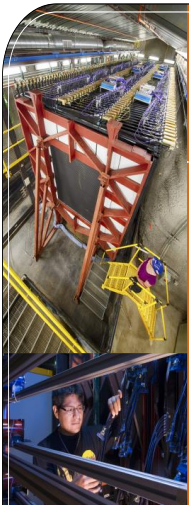
- **Click a point** along the beamline to sample the data. How many neutrinos of each type are found there?
- **Sample the data** at different points and collect enough data to answer the question, "do neutrinos morph?"
- **Click the mouse** to see a completed chart.



Trim Border DOE

FermiFact: Neutrinos are everywhere but hard to catch. They are passing through you and almost everything else all the time! Fermilab is coming up with new ways to study these elusive particles.

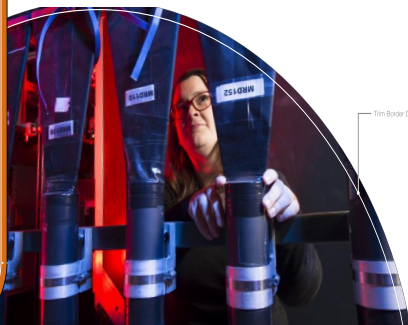
Top: Ann Norrick with MINERvA test Beam, Left: Louise Suter the NOvA Near Detector



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Top: Ann Morriss with MINERvA Test Beam. Left: Louise Suter the ND/A Near Detector

Watch Video about neutrinos and Morph.

Do Neutrinos Morph? Build a Chart!

The Neutrino Experiment

Physicists send a beam of muon neutrinos from Fermilab to Soudan to determine whether any of them morph into electron neutrinos or tau neutrinos. If they do, that observation proves that neutrinos have mass.

Determine whether the neutrinos you collect along their path are all muon neutrinos or if some of them have morphed into the other two kinds as they travel to Soudan. Read the directions at the top.

Help Background Open Chart Clear Chart

Your Chart

Discover if neutrinos morph. Collect and plot your own data along the beam line to the Soudan mine.

Build a Neutrino Chart!



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3FORM - Versa Blade

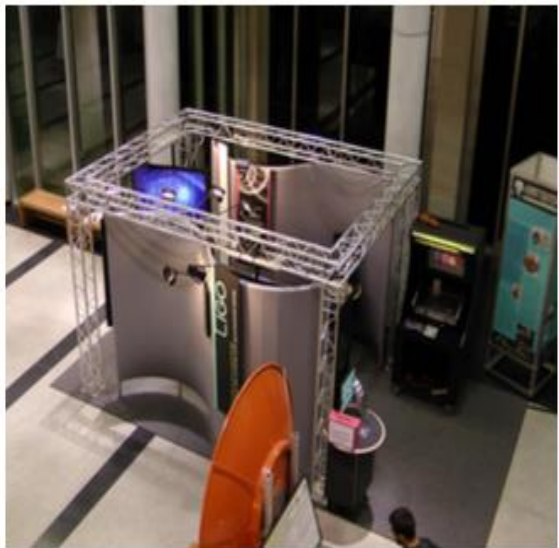
Update from LIGO

Martin Hendry

A Brief History of LIGO Exhibits: **Martin Hendry** (for the LSC EPO Group)

2009: ~\$1M NSF Grant for large and small travelling exhibition.

- Featured at WSF, USA SEF, exhibited at many US venues
- Not well-suited to “pop up” events: even the small version takes ~3 hours to assemble!...



Astronomy's new Messengers
Listening to the Universe with Gravitational Waves



Visit our exhibition website at
<http://ligo.phy.olemiss.edu/LIGOexhibit/>



A Brief History of LIGO Exhibits: Martin Hendry (for the LSC EPO Group)

Recent focus on greater **flexibility** and **scalability** – creating easily portable exhibit resources to be **used / shared** across collaboration

