



Outreach of Italy's National Nuclear Physics Institute

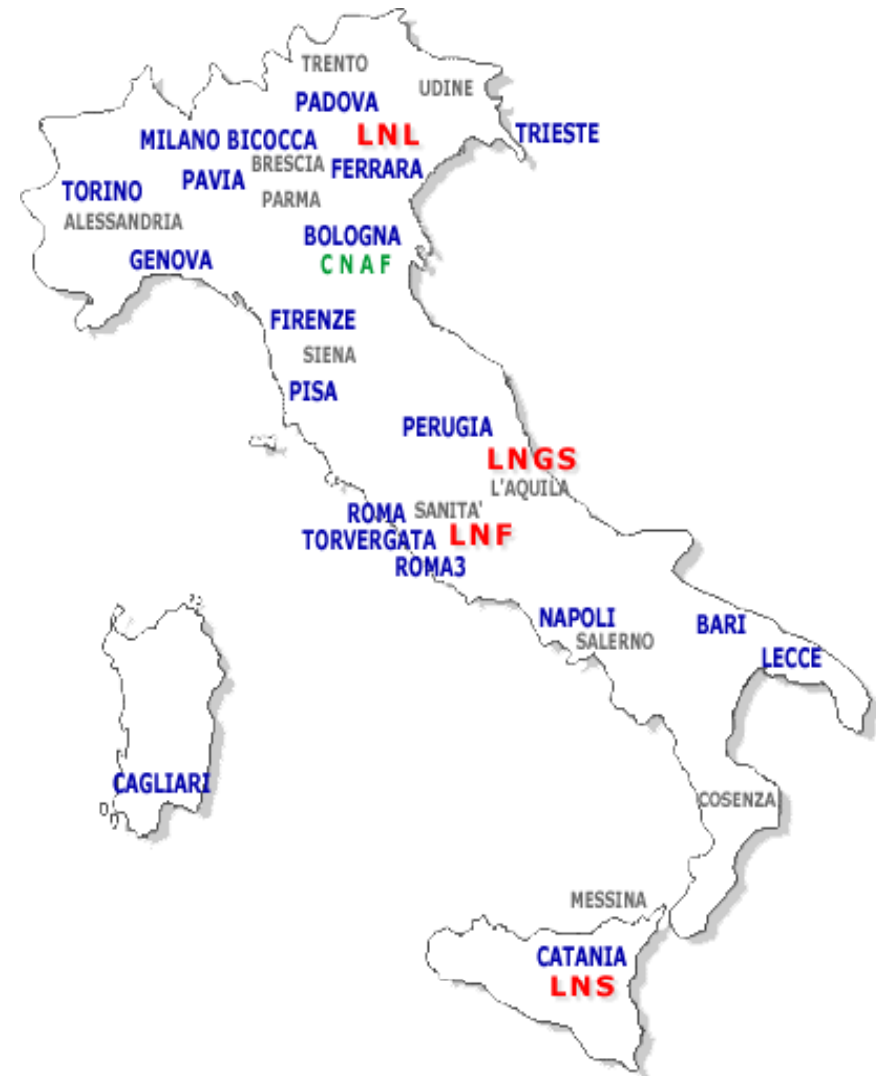


Eppog Meeting,
3 October 2008

Catia Peduto
InfN Communication Office

Italy's National Nuclear Physics Institute (INFN)

- 4 national **laboratories**
- 19 departments located inside universities and 11 sister departments
- **CNAF** in Bologna: the national data processing centre
- European Gravitational Observatory (EGO) near to Pisa (project VIRGO)
- Communication Office in the centre of Rome: **that's us!!**



Outreach activities of INFN's Communication Office:



Ufficio **C**omunicazione

www.infn.it/comunicazione

INFN review *Asimmetrie*

Exhibitions

Science festivals

Publications

Other outreach activities

Outreach of Lhc

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Exhibitions

Target: students ≥ 13 years and general public

Contents: particle physics and its applications
experiments of INFN

Exhibitions

Now travelling around Italy:

La Natura si fa in 4 (Nature is 4-divided)

- Contents: the four forces of Nature (electromagnetic, strong, weak and gravitational) each presented by several exhibits



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- The exhibition is presented by science guides.

Exhibitions

- Inauguration in Science Festival of Bergamo (October 2007)



- Science Museum Naples (March), Science Festival in Novara (April) and Padova (May)

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Next stop: Philosophy Festival in Città di Castello (October)

Exhibitions

Past exhibitions:

I Microscopi della Fisica (Microscopes of Physics)

- 100 qm exhibition with several exhibits
- Contents: to show particle physics through the instruments
- 2004-2007 in 9 Italian cities and in 2006 in Alexandria (Egypt)



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Exhibitions

... and *Fisica su Ruote* (Physics on the road)

- interactive laboratory
- Contents: 3 guided tours starting from daily life objects
- From 2003 to 2007 in 20 Italian cities. In 2004 at ESOF in Stockholm (Sweden)



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Exhibitions

Future exhibition:

Astri e Particelle (Asters and particles)

- Contents: astroparticle physics
- In preparation with other Italian research institutes
- Inauguration: October 2009 at Palazzo delle Esposizioni (Rome)
- Designed for Museo di Teramo (near LNGS)



Participation to science festivals

We send them

one of the INFN exhibitions

or

create new exhibition or outreach activity:

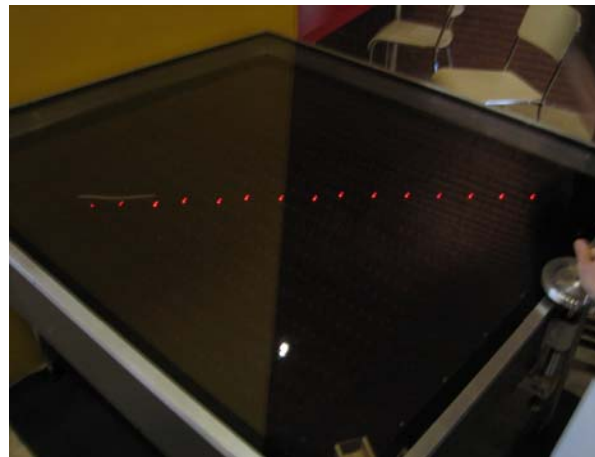
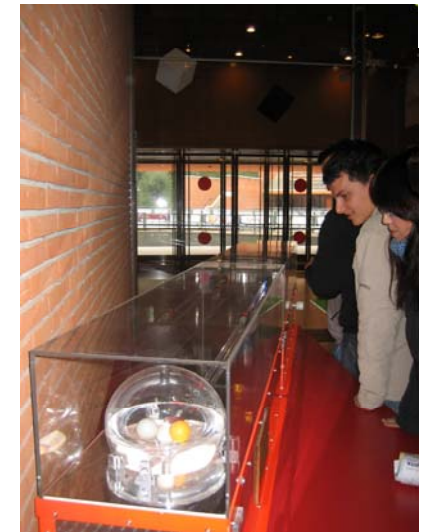
- adapted to the theme of festival

- logical order to exhibits

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Participation to science festivals

January 2007: Festival delle Scienze di Roma (Auditorium)



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Participation to science festivals

April 2007: Sperimentando (Padova)



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Participation to science festivals

May 2007: “Apriamo la mente” (Lazio)

- *Microscopi della Fisica* in San Martino al Cimino (Viterbo)
- contribution to exhibition in the centre of Rome
- open day of LNF and Lhc night event

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Participation to science festivals

May 2008: “Apriamo la mente” (Lazio)

- contribution to exhibition in the centre of Rome
- science cafés in Rome and Viterbo
- theatre spectacle about Optics

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Participation to science festivals

July 2008: ESOF Barcellona

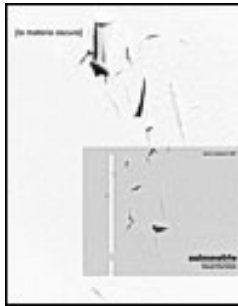
- CasaProton (INFN Turin): Lhc experiments
- Aspera exhibition: cosmic ray detector and Virgo exhibit



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INFN review *Asimmetrie*



+



Dark matter

Gravitational waves

Accelerators

Quarterly review edited by INFN (monograph)

Target:

- institute employees (researchers, technician and administrative personnel)
- high school students (reached through the mediation of physics teachers)

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INFN review *Asimmetrie*

Authors: researchers of the INFN

Editing process: guided by the Communication Office

Also an online review: www.asimmetrie.it

Next issue: *Antimatter*

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Other outreach activities

Masterclasses

- 9 INFN departments
- coordinated by INFN Communication Office



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Other outreach activities

Fisica in barca (Physics on the boat)



- October/November 2005
- November/December 2007
- May 2008

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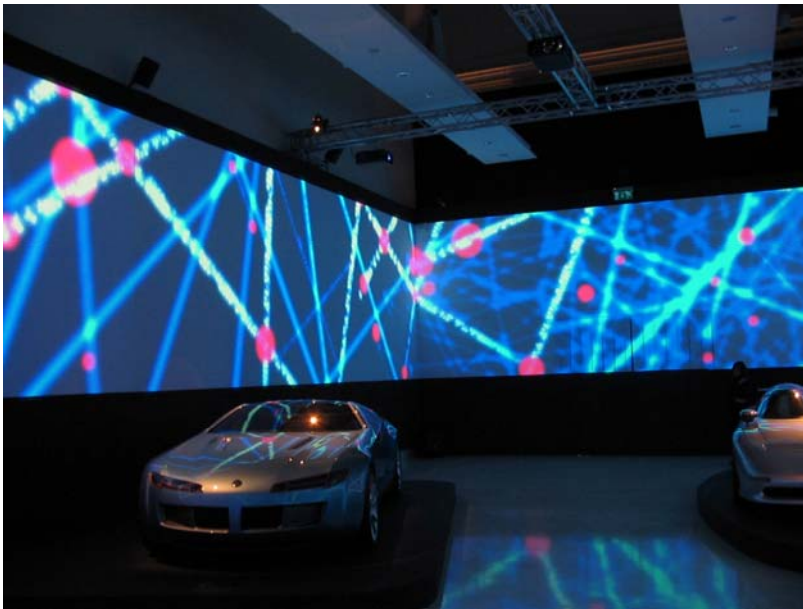


Other outreach activities

Participation to exhibition

Il mito della velocità (The myth of velocity)

- from February to May 2008 in Palazzo delle Esposizioni (Rome)




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Lhc outreach

- 7 posters
- Lhc video
- “Boson day” - event in Science Museum of Milan and Naples in spring for the inauguration

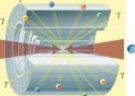
La scienza di LHC



Gli obiettivi di Lhc

La massa
Con questi esperimenti i fisici cercheranno di capire qual è l'origine della massa, una proprietà della materia che ci permette di esistere.

Il bosone di Higgs
La sfida di Lhc è quindi vedere per la prima volta, grazie all'enorme energia con cui fa scontrare fra loro gruppi di protoni, il bosone di Higgs, la particella in grado di spiegare come mai esiste la massa. I fasci di protoni si incrociano 40 milioni di volte al secondo.



A ogni incrocio, avvengono in media 20 collisioni protone-protone.

TOTALE: 800 milioni di collisioni per secondo. Ci si aspetta di vedere il bosone di Higgs una volta ogni 10.000.000.000.000 di collisioni, quindi non più di una volta al giorno.

Il contributo Infn
L'Infn coordina i circa 600 fisici italiani che lavorano a Lhc e ha contribuito in modo rilevante alla sua progettazione e realizzazione.


Che cos'è il Large Hadron Collider

È la più potente macchina al mondo. È un acceleratore di particelle al cui interno sono accelerati protoni ad altissima velocità, che vengono poi fatti scontrare fra di loro. Dagli scontri nascono moltissime particelle che vengono registrate dai rivelatori e poi analizzate dai fisici.

Come è fatto

Gli esperimenti saranno condotti lungo il percorso di un tunnel circolare sotterraneo situato a 100 m di profondità.

Circonferenza 27 km




Tunnel Magneti Schermo termico Bobine superconduttive
Sbarre di distribuzione della bobina


Dove si trova

FRANCIA
Svizzera

Al Cern di Ginevra, al confine tra Francia e Svizzera



Lhc è formato da circa 2.000 magneti superconduttivi mantenuti a una temperatura di circa -271°C.



Gli esperimenti

<p>Lhc-b</p> <p>Studierà come si sia creata l'asimmetria tra materia e antimateria.</p>	<p>Atlas e Cms</p> <p>Hanno come scopo principale la verifica dell'esistenza del bosone di Higgs e della supersimmetria.</p>
<p>Alice</p> <p>I fisici osserveranno un plasma di quark e gluoni, cioè uno stato della materia esistito subito dopo il Big Bang.</p>	

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