



Istituto Nazionale di Fisica Nucleare
Laboratori Nazionali di Frascati

Bruno
Touschek
visitor centre

Laboratori Nazionali di Frascati - INFN

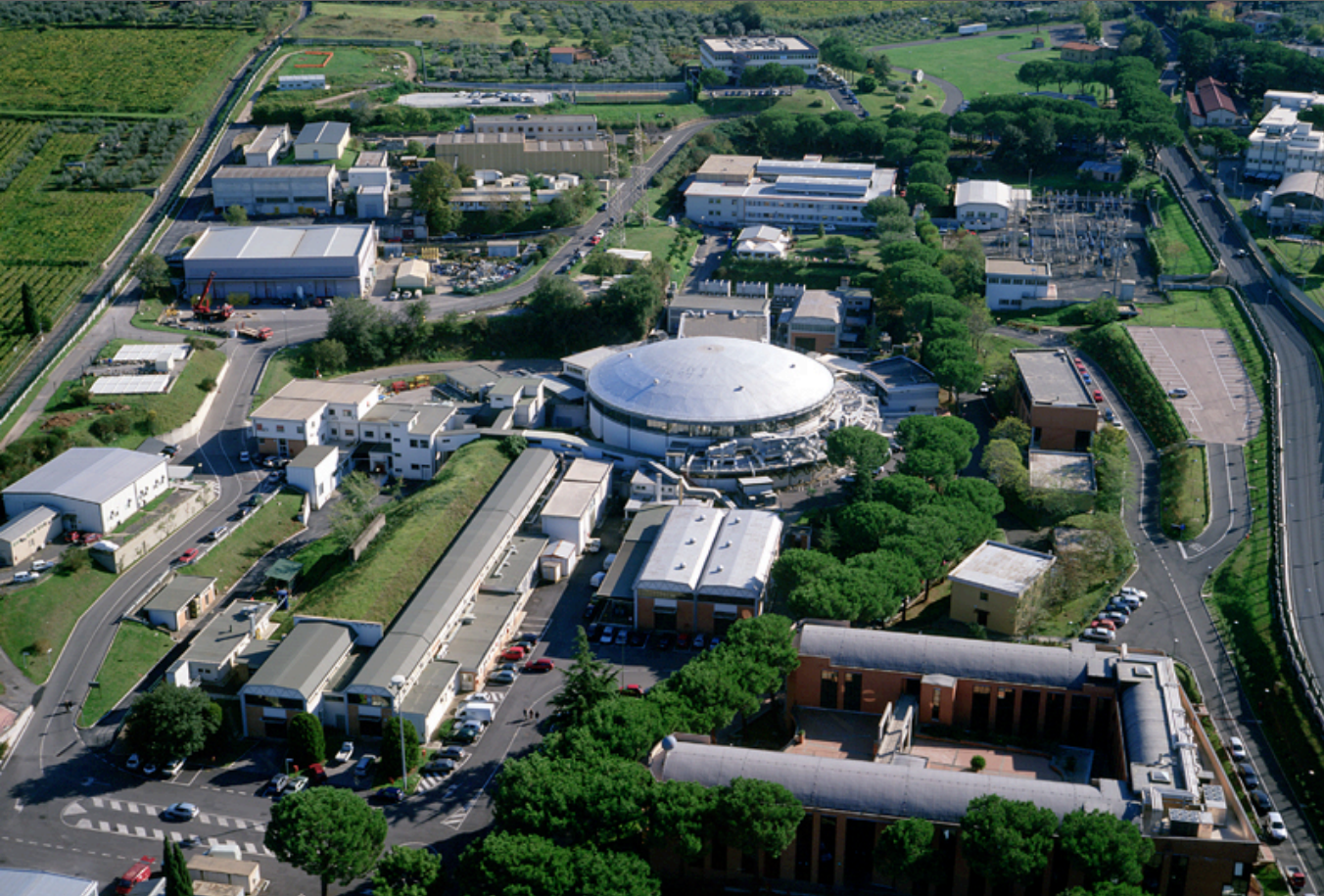


The INFN-LNF Bruno Touschek Visitor Centre: a hub for public engagement activities

S. Bertelli, D. Domenici, E. Danè

ICHEP 2022, Bologna July, 9

INFN Frascati National Laboratory



Built in 1955, the **National Laboratory of Frascati (LNF)** was the first Italian research facility for the study of nuclear and subnuclear physics with accelerators

It is the largest laboratory of the Italian National Institute for Nuclear Physics (INFN), the agency whose mission is theoretical, experimental and technological research in subnuclear, nuclear and astroparticle physics

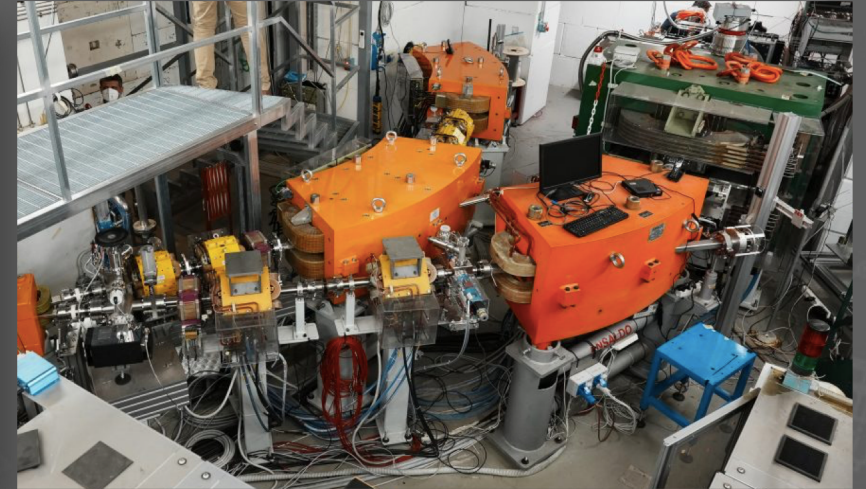
EPS Historic site for the first proton-positron Collider AdA in operation in 1961

Situated in a very important scientific area: ENEA, ESA-ESRIN, CNR, INAF, Universities

INFN Frascati National Laboratory

RESEARCH FIELDS

High Energy, Astroparticle, Nuclear, Theoretical, Technology and Applied Physics, Computing



INFN Frascati National Laboratory

PUBLIC ENGAGEMENT WITH SCIENCE

Students
Programme

Teachers
programme

General public
Long Life Learning

Policy makers
Politicians

Tech transfer
Industries companies
Universities

10000 visitors every year – before Covid

THE IDEA OF A VISITOR CENTRE

Bridge science and society, sharing knowledge, place for formal and informal physics education activities

Chronicle the history of the Laboratory with a focus on particle accelerators and detectors

Preserve the historical-scientific heritage of LNF

Showcase instruments of experiments either held in LNF or outside

Combine parts of real experiments, video mapping, multimedia, hands-on/body-on experiments, installations

THE IDEA OF A VISITOR CENTRE



Bruno
Touschek
visitor centre
Laboratori Nazionali di Frascati - INFN



TOP VIEW

EDULAB

Bruno
Touschek
visitor centre
Laboratori Nazionali di Frascati - INFN



LISTENING TO THE COSMOS

SEEING THE INVISIBLE

THE GIFT OF MASS

FROM RESEARCH TO SOCIETY

ACCELERATING PARTICLES



HANDS-ON /
DEMOS ACTIVITIES

EDULAB

EXHIBITION AREA

LISTENING TO THE COSMOS

SEEING THE INVISIBLE

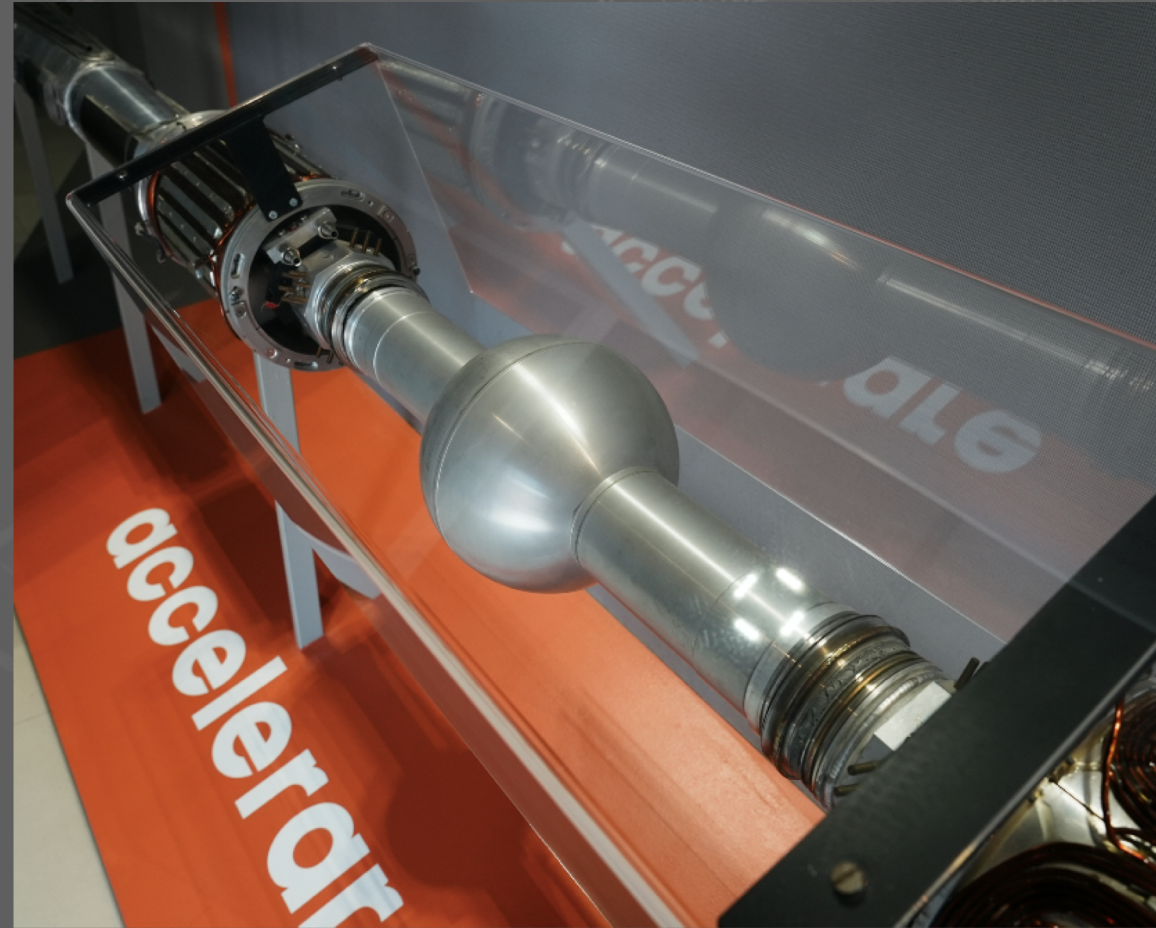
THE GIFT OF MASS

FROM RESEARCH TO SOCIETY

ACCELERATING PARTICLES

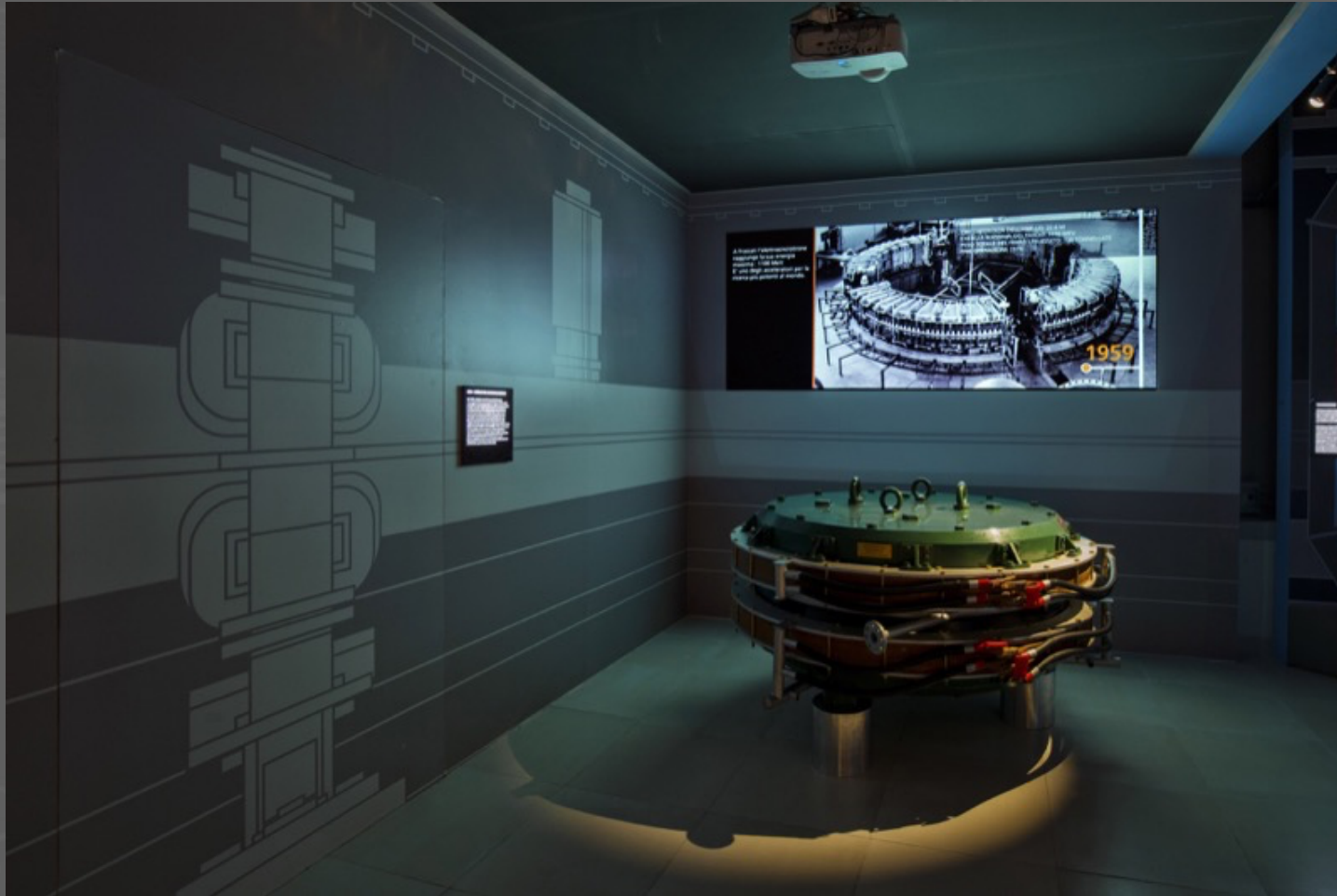


Accelerating particles



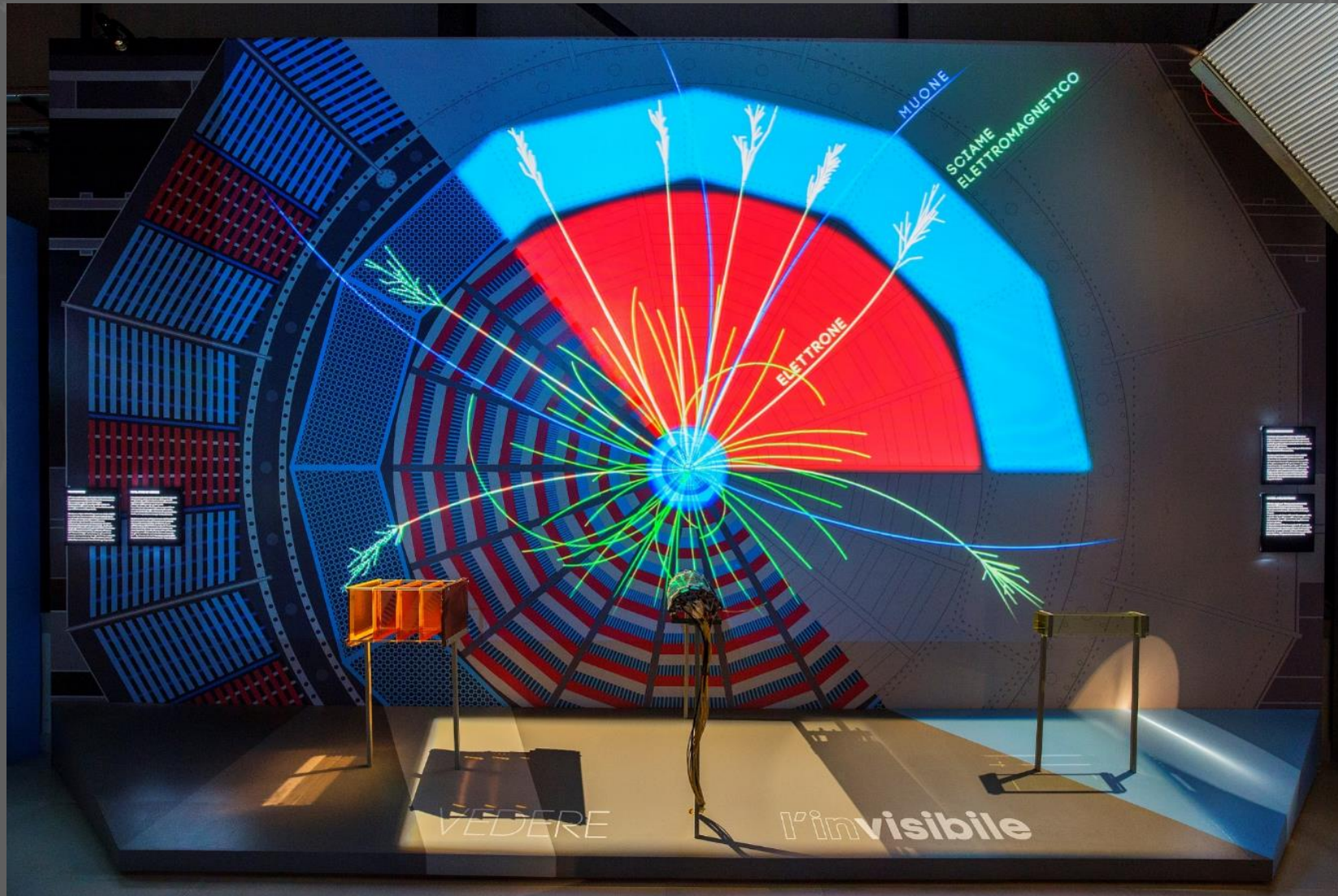
DAFNE/Kloe interaction point

Accelerating particles

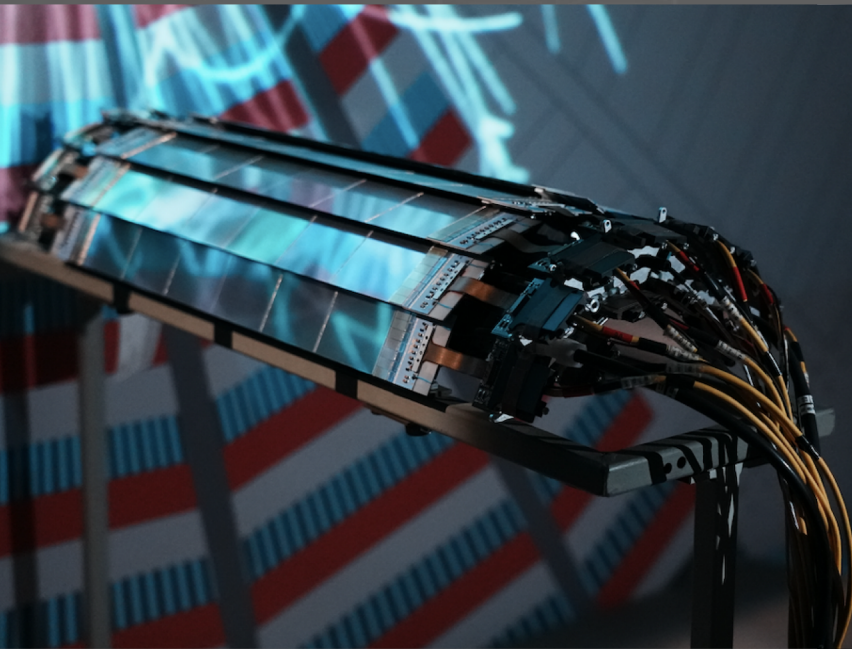


AdA mockup

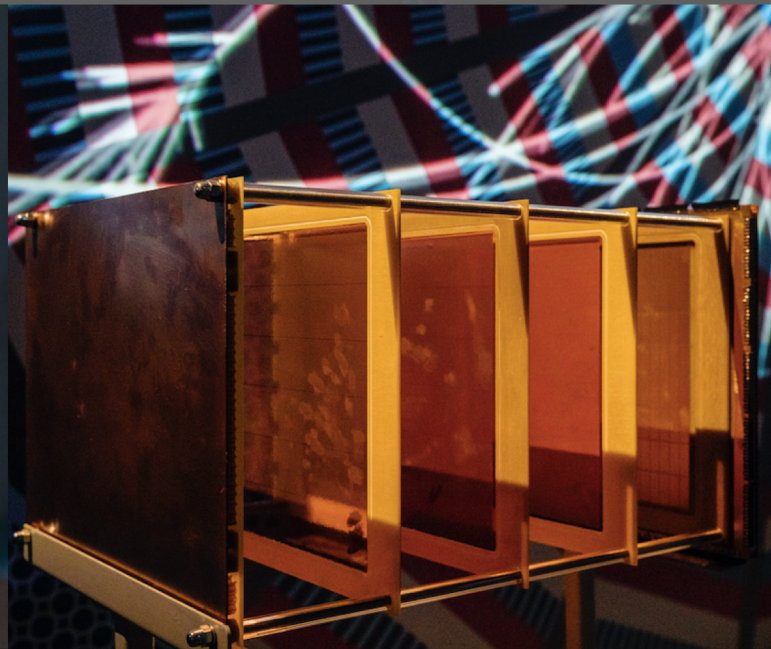
Seeing the invisible – video mapping



Seeing the invisible



The Aleph vertex locator

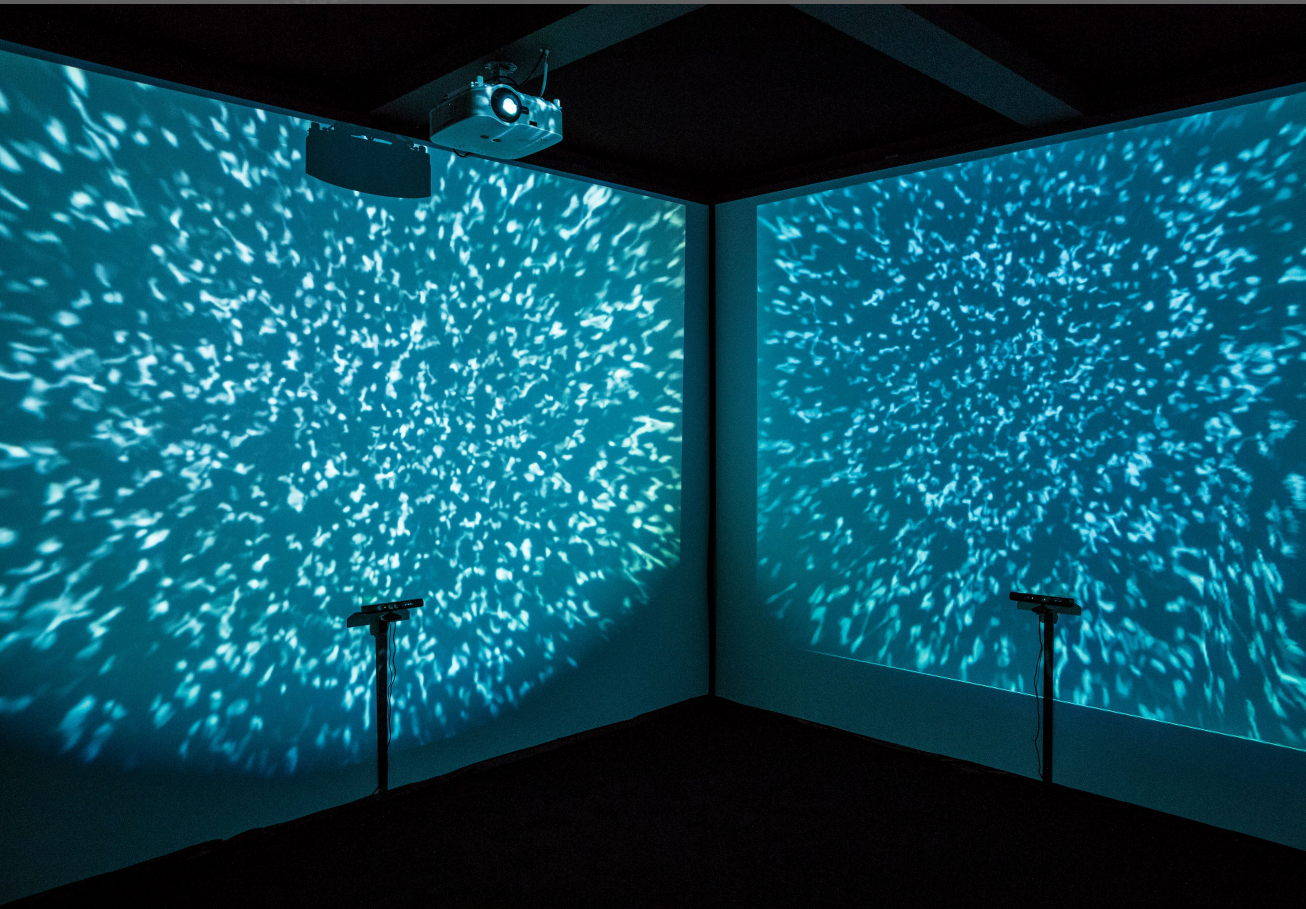


LHCb triple GEM detector



Module of KLOE calorimeter

The gift of mass – art installation



Listening to the Cosmos



ANTENNA GRAVITAZIONALE TIGA

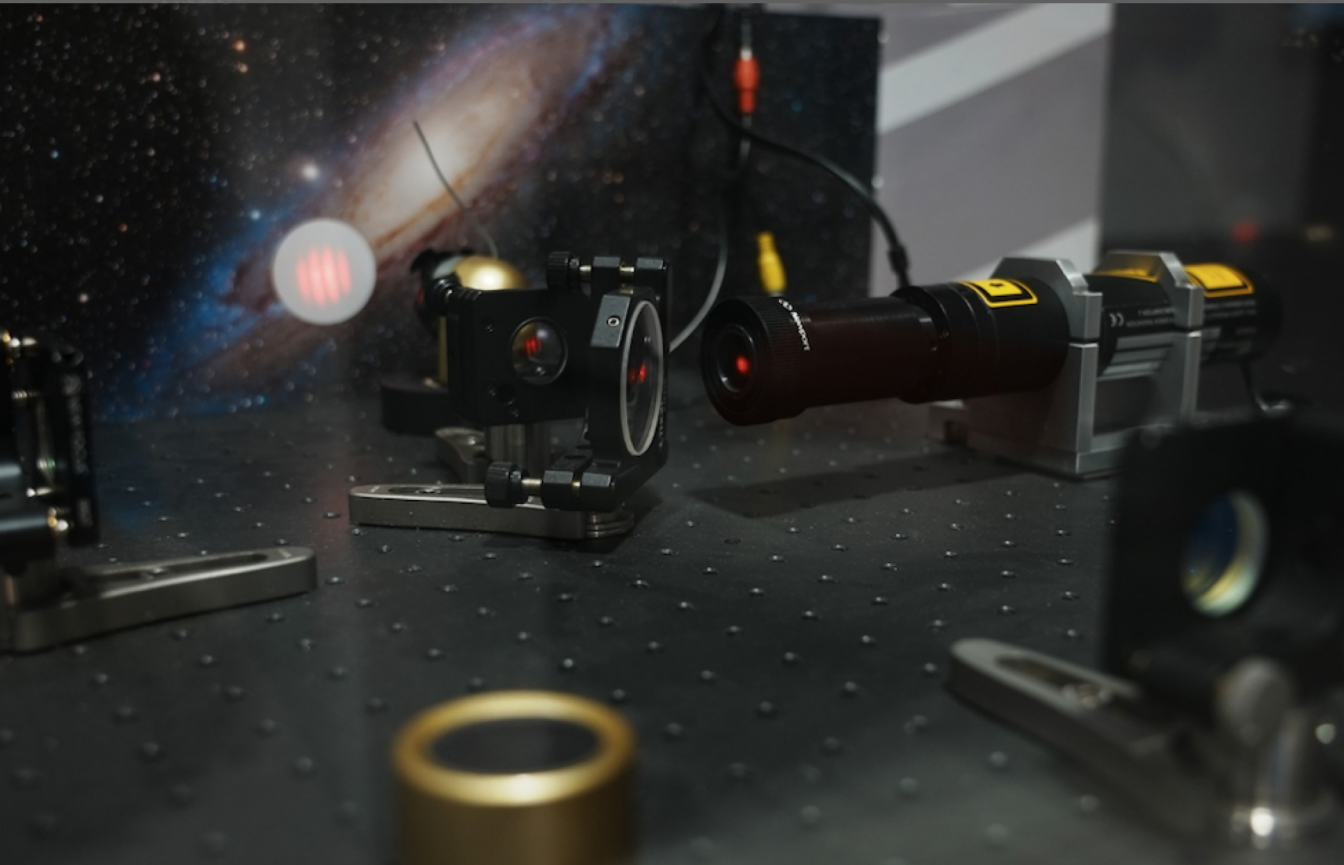
Tra gli strumenti utilizzati nella lunga caccia alle onde gravitazionali ci sono le barre risonanti, come quella del rivelatore NAUTILUS attivo a Frascati dal 1995 al 2017 ed esposto oggi all'esterno del Visitor Centre. NAUTILUS contiene un cilindro di alluminio lungo 3 metri, pesante 2300 kg, completamente isolato dalle vibrazioni esterne e che veniva tenuto alla temperatura di -273°C .
Fino ad oggi, per poter misurare variazioni di lunghezza della barra fino a 10^{-18} m , pari a un milionesimo di un'un'onda gravitazionale. L'antenna risonante esposta, denominata TIGA, *Truncated Icosahedral Gravitational wave Antenna*, è un prototipo realizzato alla fine degli anni '90 e non ultimamente sviluppato. L'idea era di ottenere, grazie alla particolare forma poliedrica, una sensibilità uniforme rispetto a qualsiasi direzione di provenienza delle onde gravitazionali, a differenza delle barre cilindriche, sensibili principalmente nella direzione delle trasversali alla loro lunghezza.

TIGA gravitational wave antenna

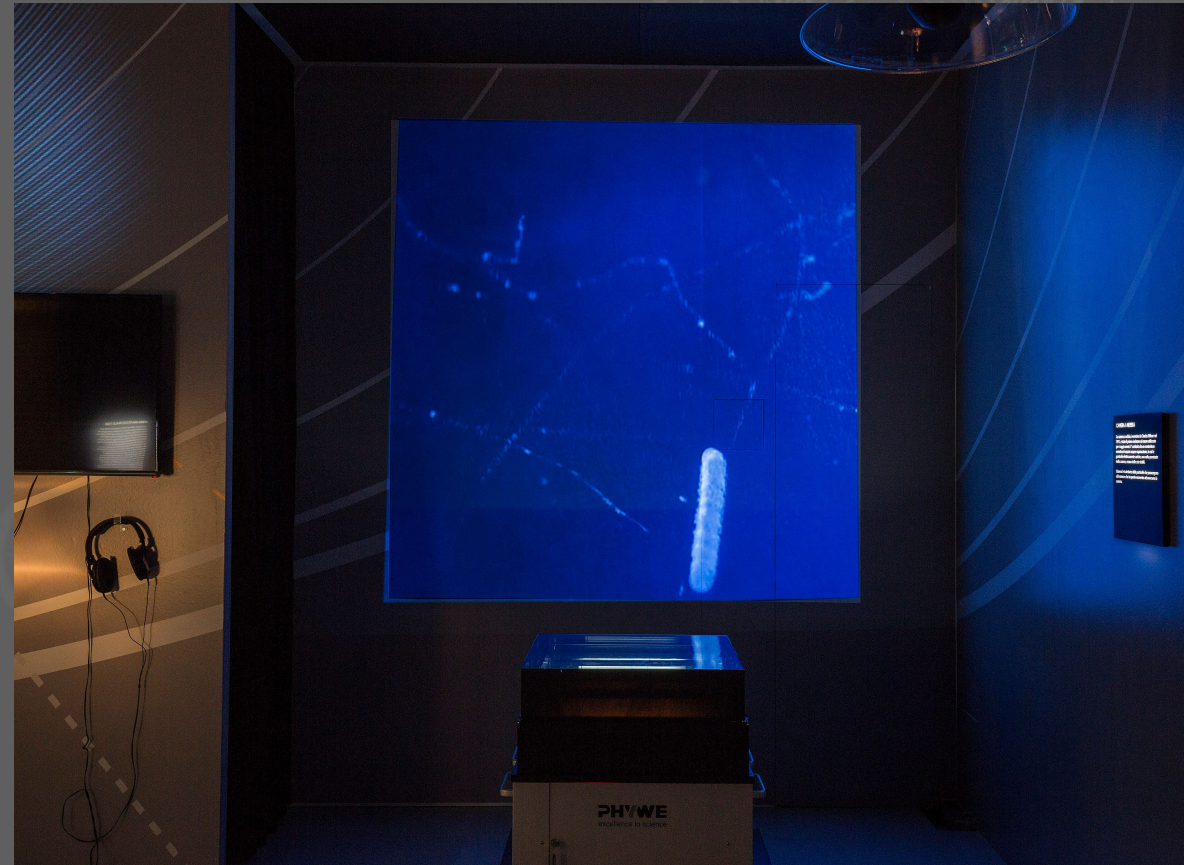


NAUTILUS gravitational wave antenna

Listening to the Cosmos

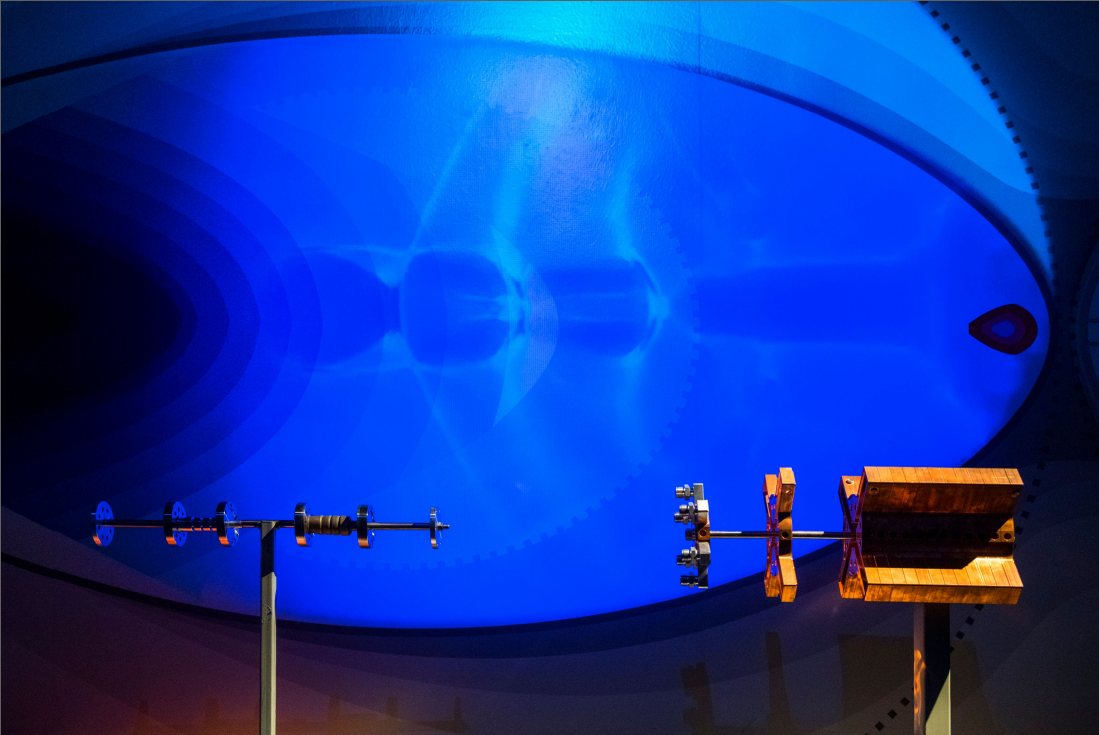


Interferometer



A Cloud Chamber

From Research to Society – future developments

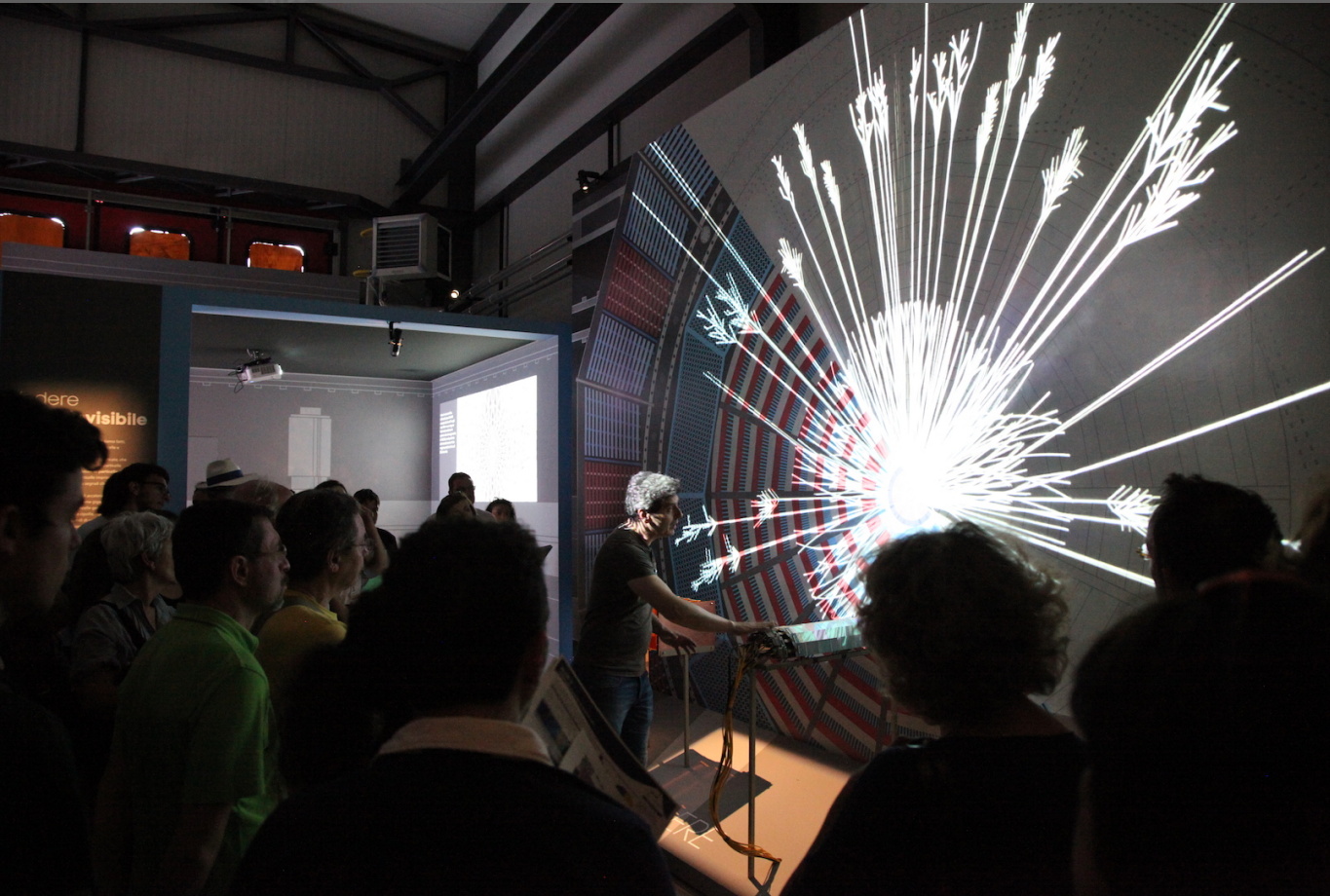


Radiofrequency cavity



Gas-Filled Capillary Plasma for
Laser Wakefield Acceleration

Events at the Bruno Tuschek Visitor Centre



Thursday afternoon openings

Visits for kids, students, teachers and general public, politicians, policy makers

Opendays, European Researchers' Night, Science Festivals

C'è spazio, tv show, in collaboration with ESA

Nov 2018 – Feb 2020: 7000 visitors

Virtual guided tours and video-lectures – during the pandemic

Available on INFN LNF YouTube channel

Recipients:

Students, teachers and general public

Public and restricted mode to allow interaction

Live chat

Italian and English



Virtual guided tours and video-lectures – during the pandemic

Available on INFN LNF YouTube channel



<https://bit.ly/physics-electron>

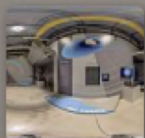


<https://bit.ly/lecture-detectors>

VISITOR



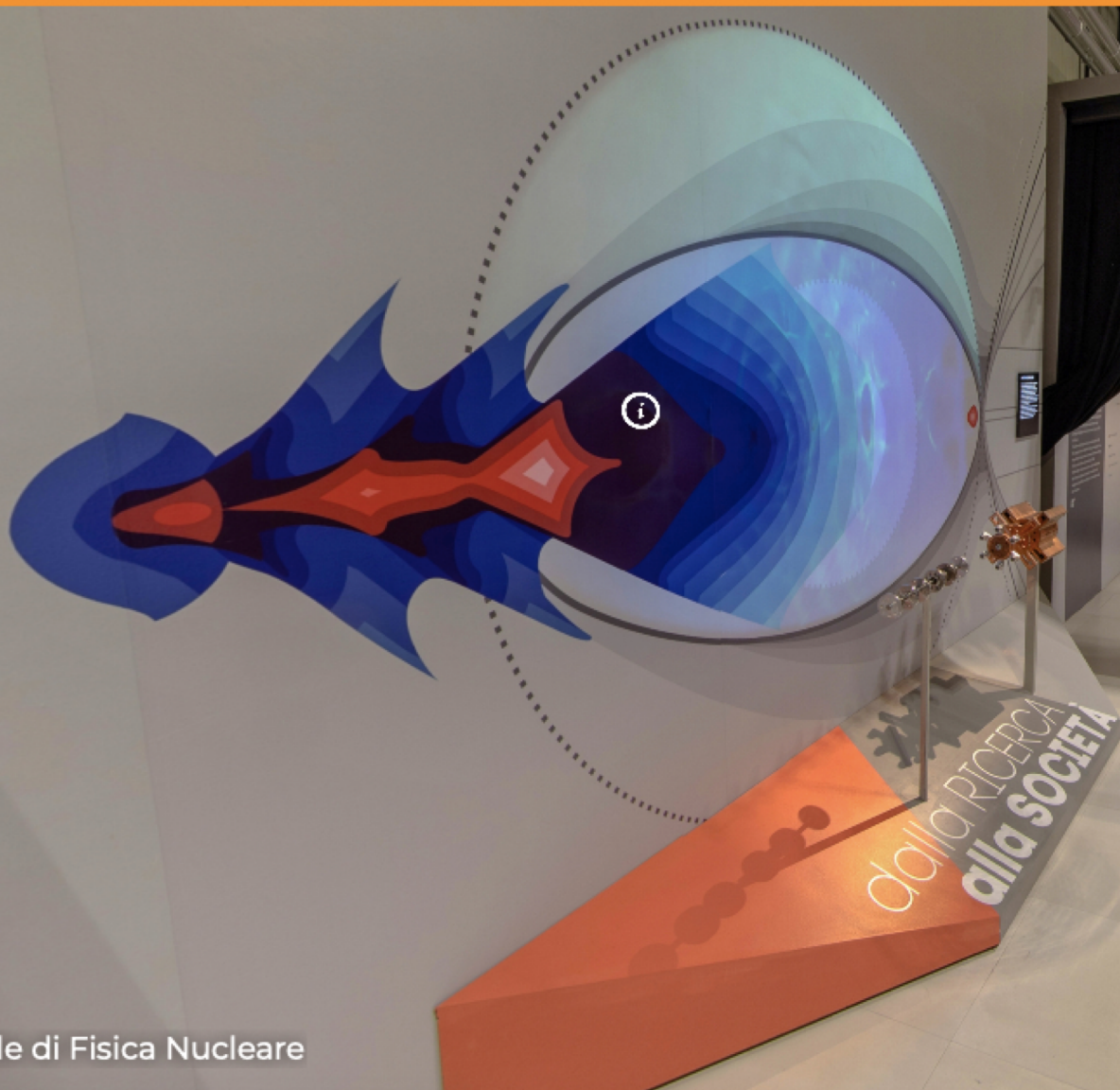
VISITOR II



VISITOR III



VISITOR IV



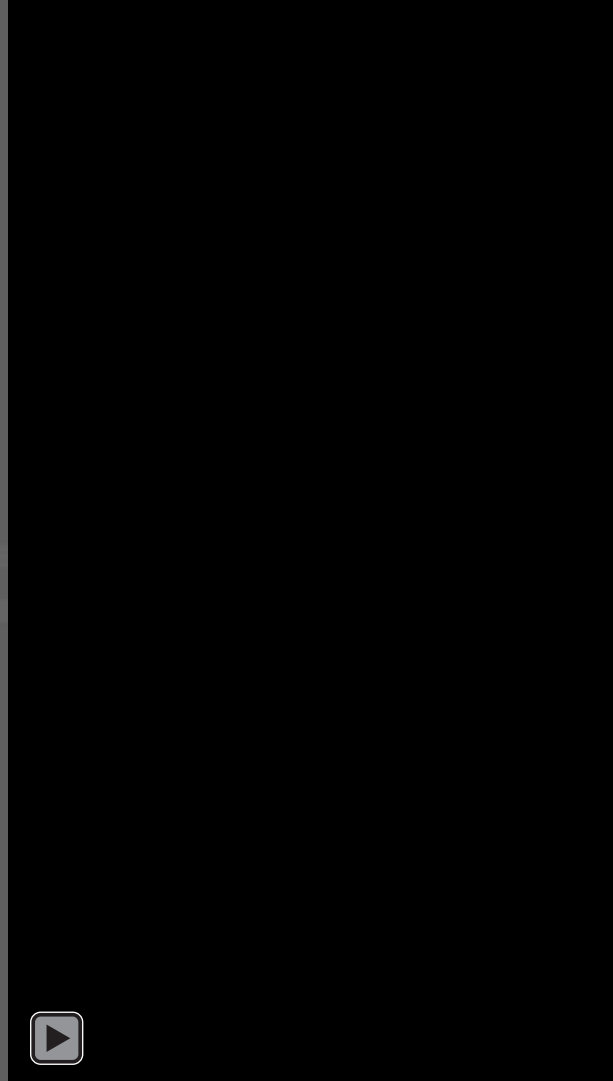
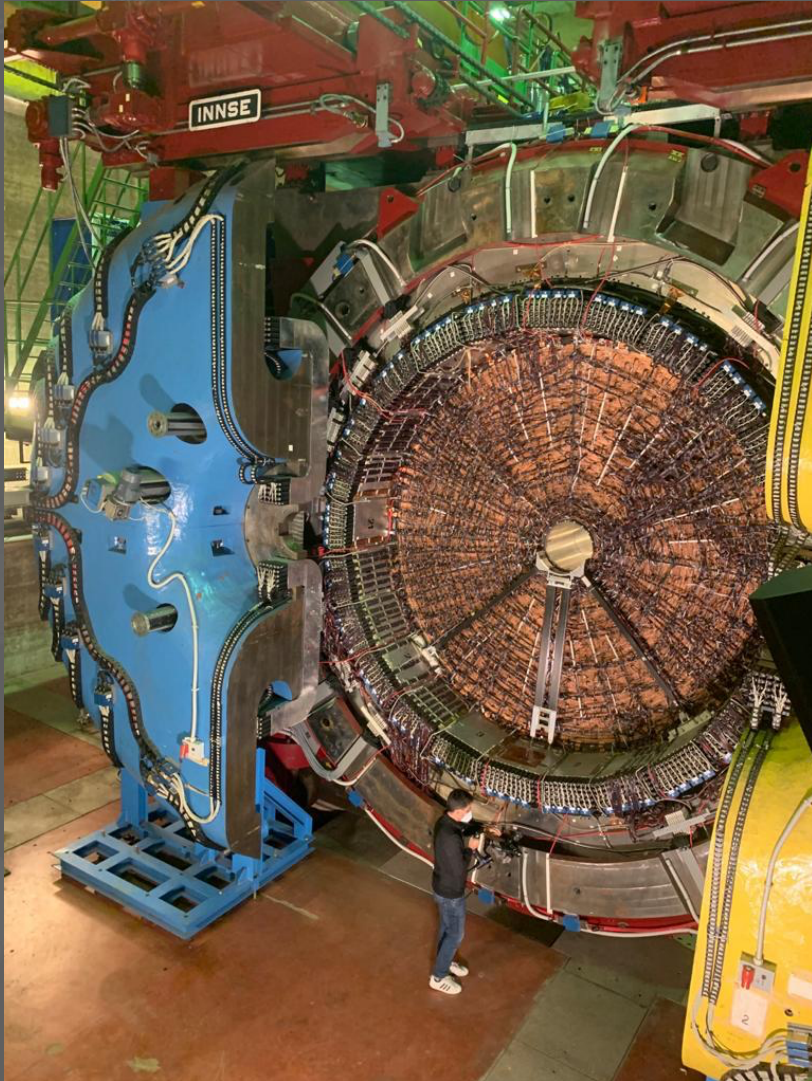
INFN

Istituto Nazionale di Fisica Nucleare

<https://www.teravista.it/inf/>



2022: KLOE video mapping – The perfect asymmetry



Conclusions and perspectives

The Bruno Touschek Visitor Centre is a permanent exhibition dedicated to the history of particle physics, that plays a central role in the popularization of INFN LNF science initiatives (in person and virtual)

The Centre is conceived as a public engagement hub to promote the scientific culture and to preserve the LNF historical-scientific heritage

In the near future:

Increasing number of events (also in blended modality) to engage people, realization of virtual and augmented reality exhibits

In the long-term:

Realization of a Science Centre (design and socio-impact study in progress) to enlarge the public outreach activities, creating a stronger connection to the territory



Istituto Nazionale di Fisica Nucleare
Laboratori Nazionali di Frascati

Bruno
Touschek
visitor centre

Laboratori Nazionali di Frascati - INFN



susanna.bertelli@Inf.infn.it

visitorcentre.Inf.infn.it

[**teravista.it/inf/**](http://teravista.it/inf/)

[**w3.Inf.infn.it**](http://w3.Inf.infn.it)