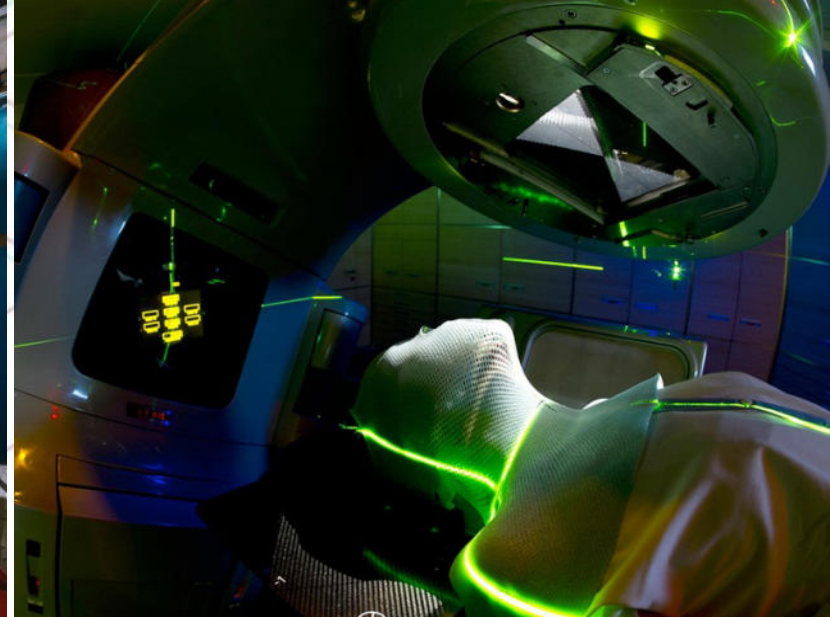




From Fundamental Research To Life Science

Alessandro Raimondo

CERN Knowledge Transfer Group - Medical Applications



CONSIGLIO NAZIONALE
DEGLI **INGEGNERI**



16.12.2021



*Conseil Européen pour la **Recherche Nucléaire***
European Organization for Nuclear Research





LHCb

ATLAS

CERN Meyrin

CERN Prévessin

SPS 7 km

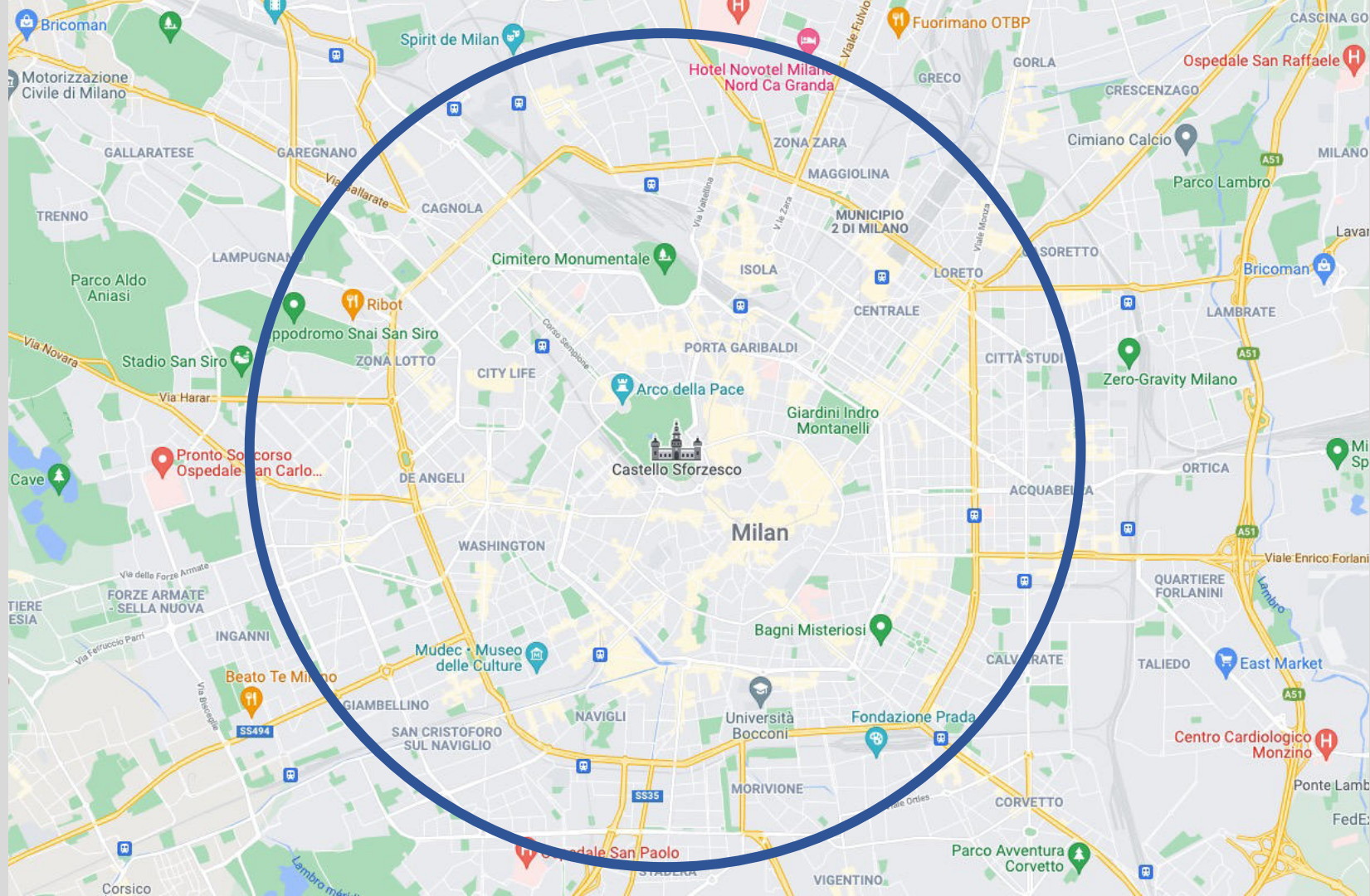
100 m

ALICE

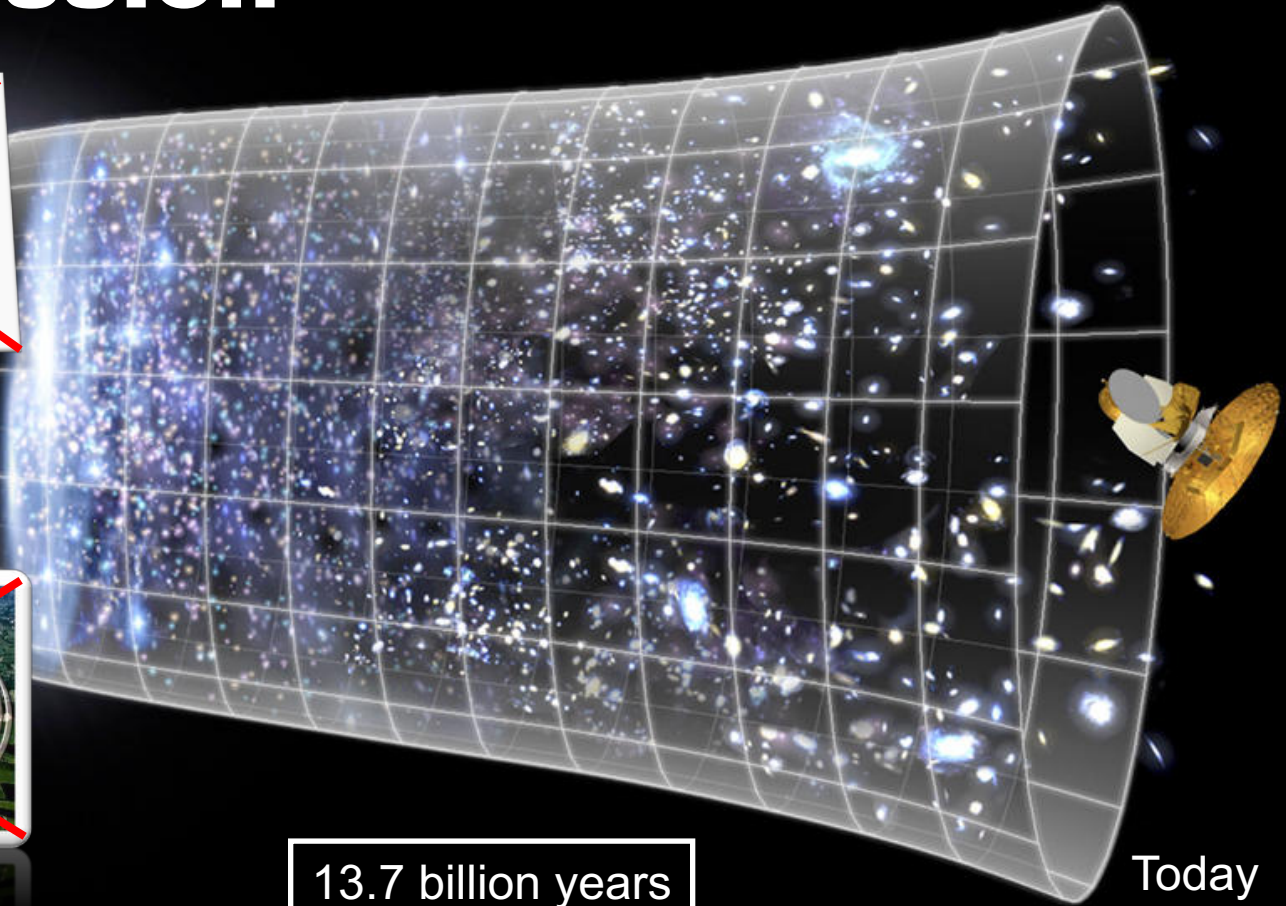
CMS

LHC 27 km

SUISSE
FRANCE



CERN mission

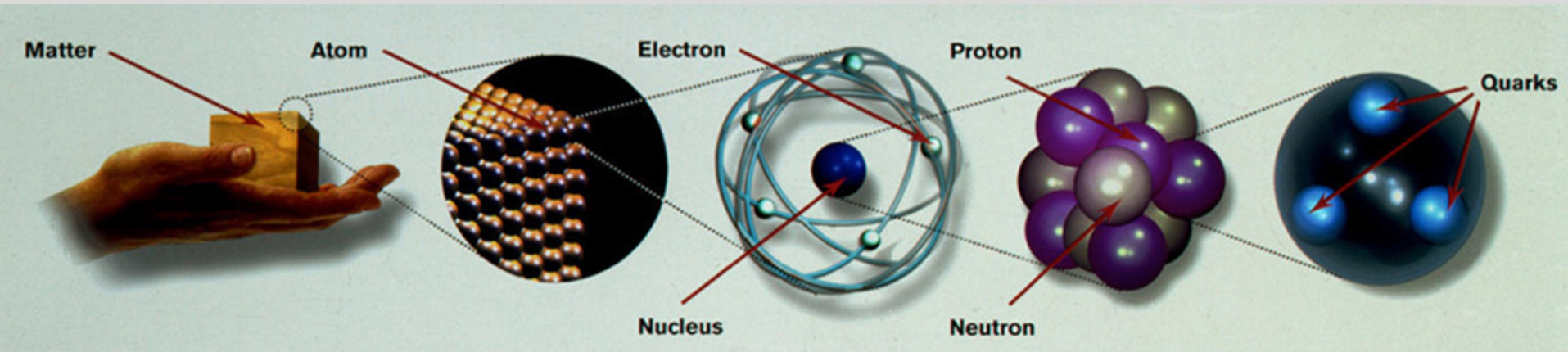


13.7 billion years

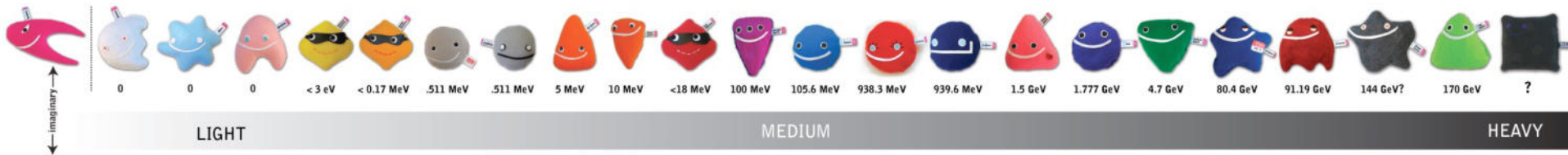
Today

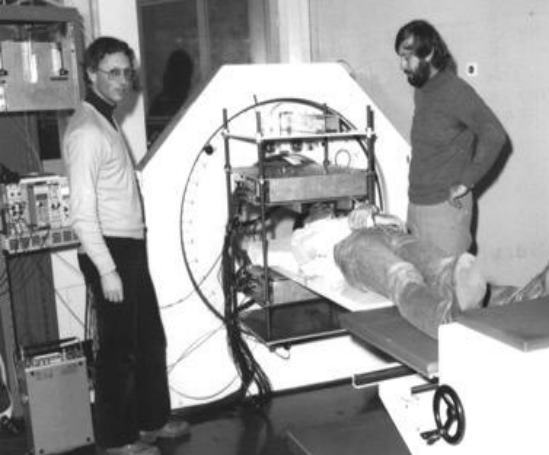
10^{28} cm

Fundamental Physics



PARTICLE MASS SPECTRUM





CERN/SPC/1091/RA
CERN/FC/6125/RA
CERN/3311/RA
Original: English
23 May 2017

ORGANISATION EUROPEENNE POUR LA RECHERCHE NUCLEAIRE CERN EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH

Action to be taken

Voting Procedure

For information	SCIENTIFIC POLICY COMMITTEE 304 th Meeting 12 & 13 June 2017	-
For information	FINANCE COMMITTEE 360 th Meeting 13 & 14 June 2017	-
For approval	RESTRICTED COUNCIL 185 th Session 16 March 2017	Simple majority of Member States represented and voting

Strategy and framework applicable to knowledge transfer
by CERN for the benefit of medical applications

The Council is invited to approve the strategy and framework set out in this document for medical applications-related activities, and to take note of the information contained in Annexes I and II.

Longterm History

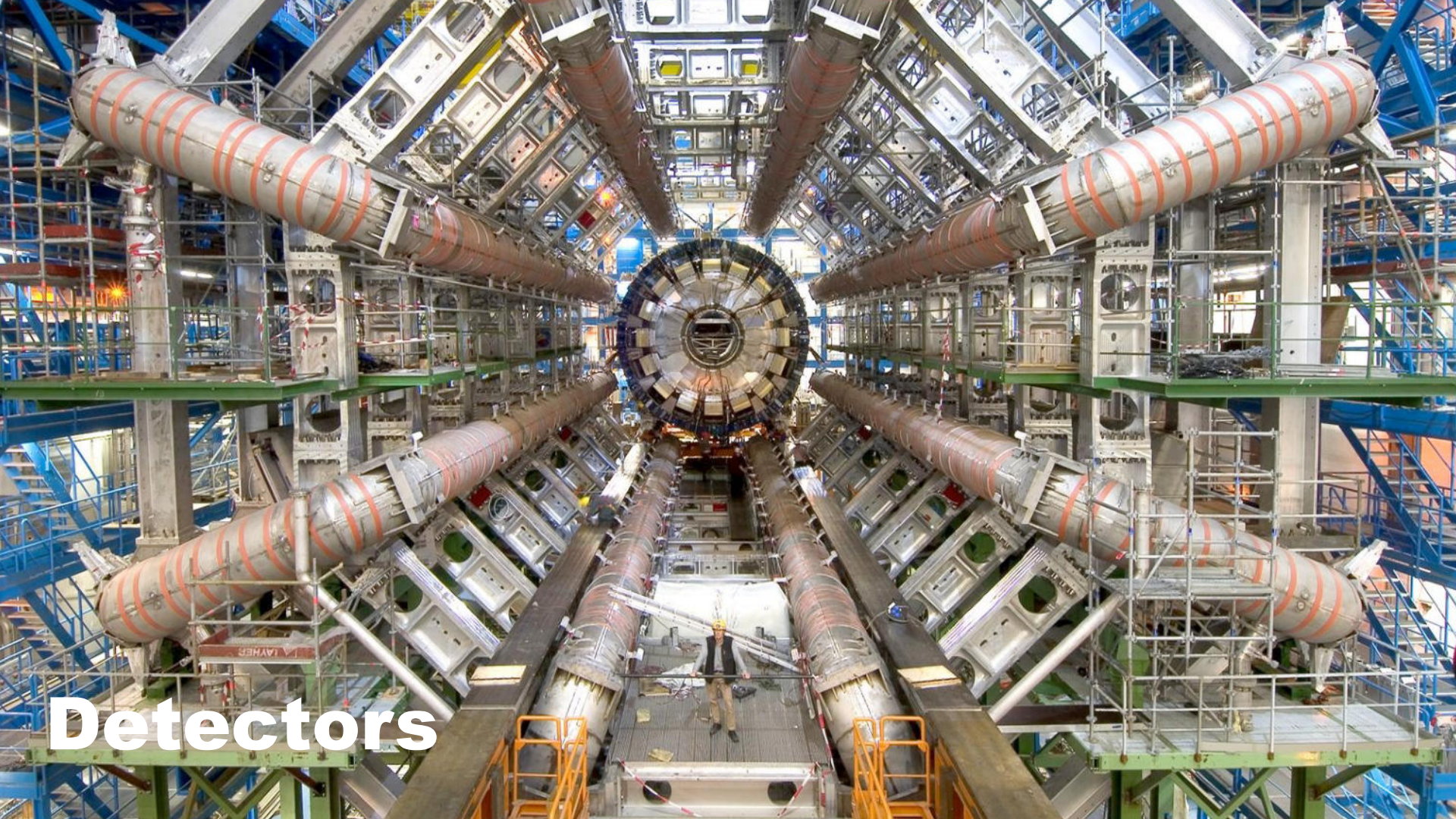
5.7 μA , F^{18} (positron emission)
spacing = 1 cm.

RECONSTRUCTION



Accelerators





Detectors



Computing



**RESEARCH
TECHNOLOGY
TRAINING
COLLABORATION**

Knowledge Transfer



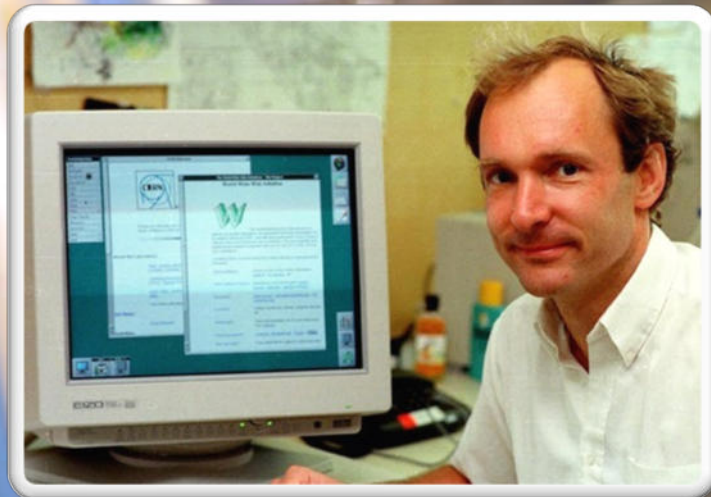
WHERE THE WEB WAS BORN

In the office of the director of the Information Science Center
Wide Web were developed.

Started in 1989 from a project called "Information Science Center"
was first funded between a research center and the
Networking Division (NSF) and the National Science Foundation
Computing in Physics Division (NSF)

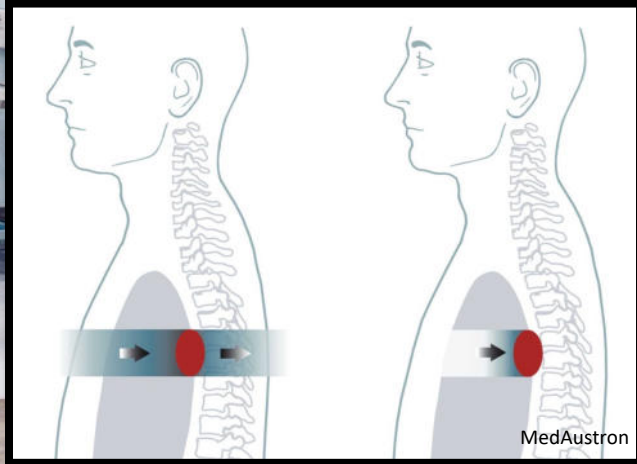
In 1989 the first computer network was developed
It was composed of two different networks
Robert Kahn, MIT, and the National Science Foundation
a computer network was

At the end of 1989 the first computer network was developed
Computer (NSF) and the National Science Foundation
Web is a 100% computer network
the European Commission in 1989
1992, the first computer network was developed
Automatic Web, with the National Science Foundation

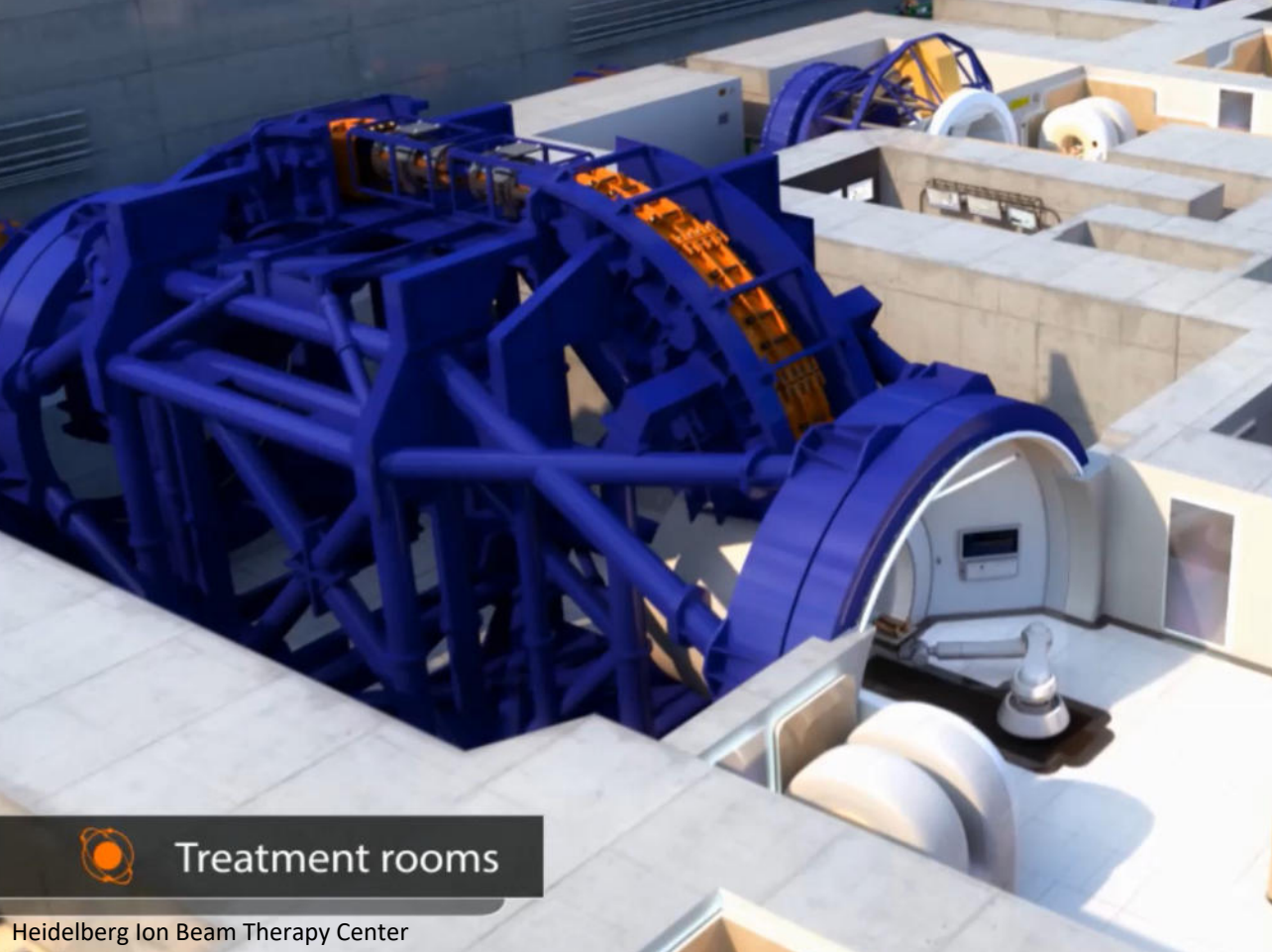




Hadron Therapy

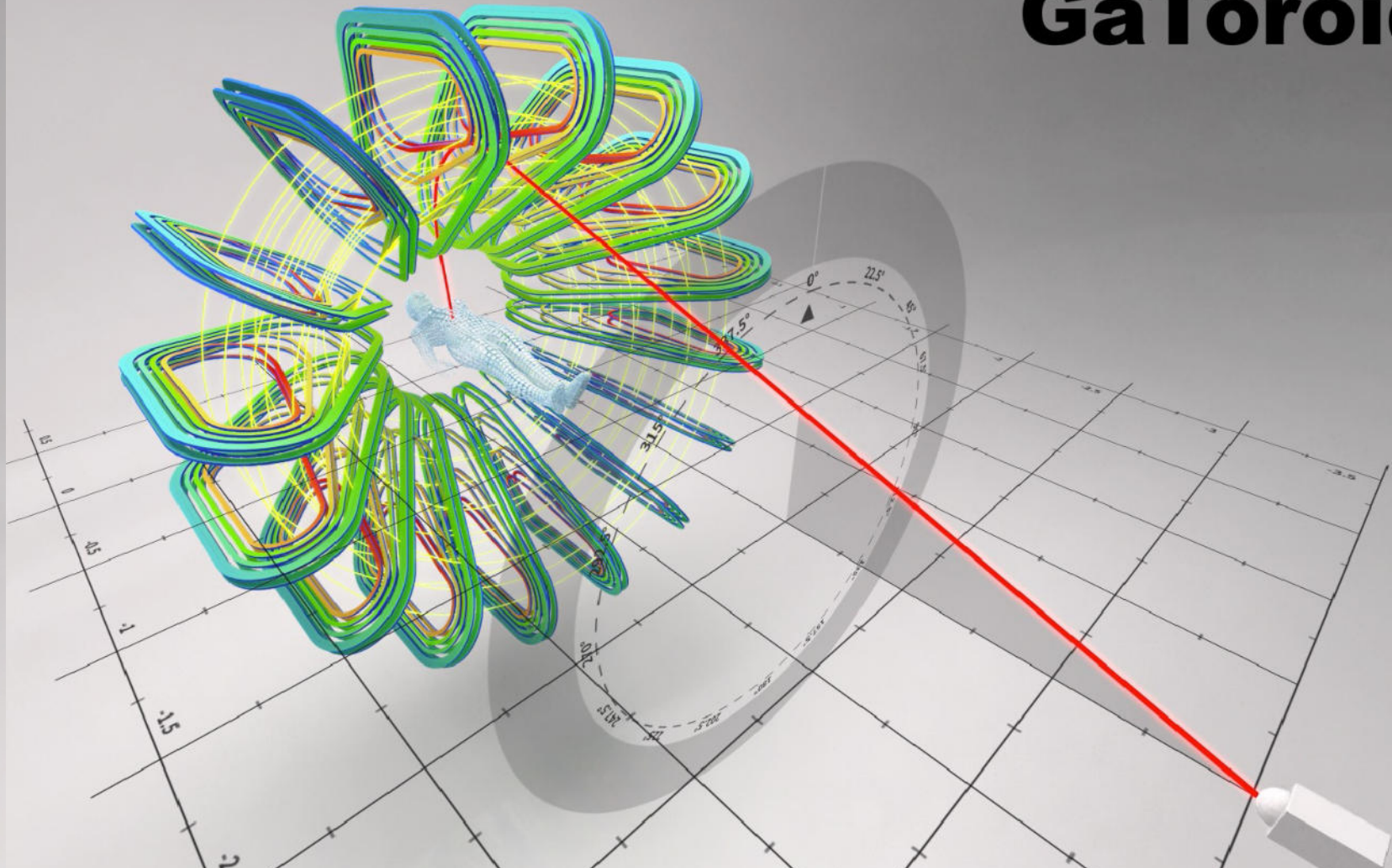


Gantry for Hadron Therapy

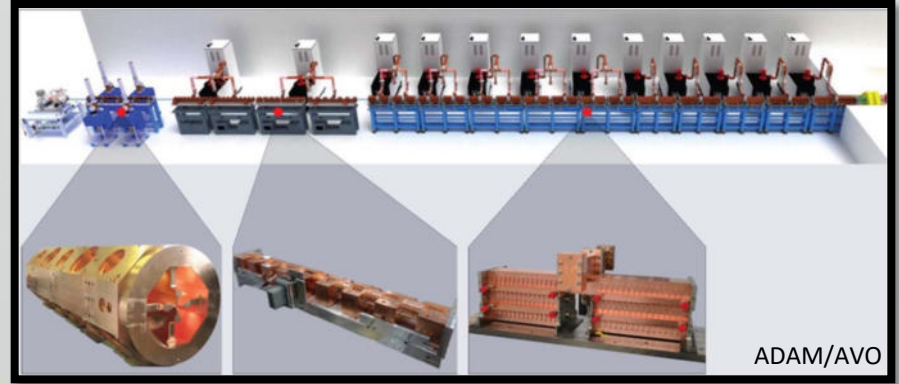
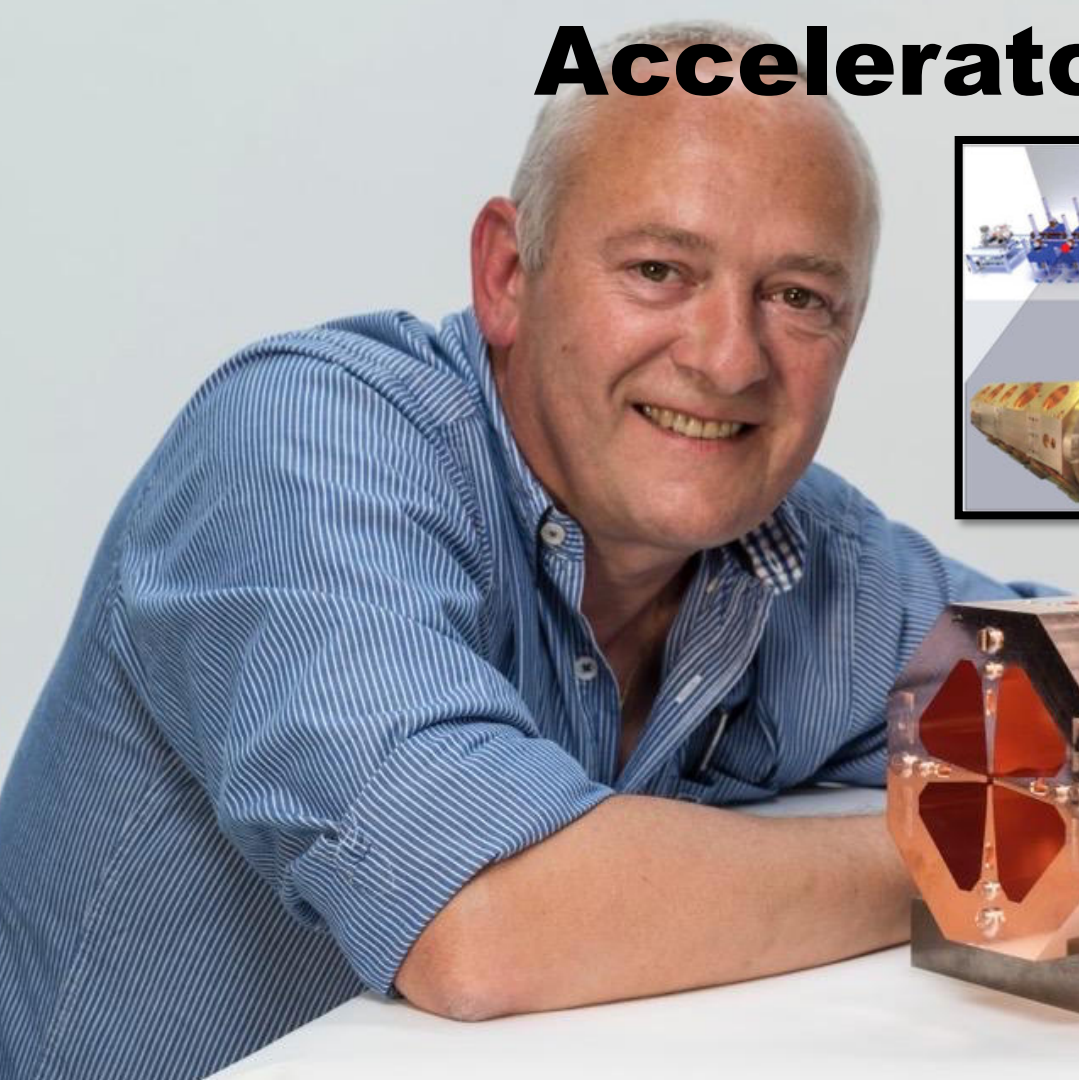


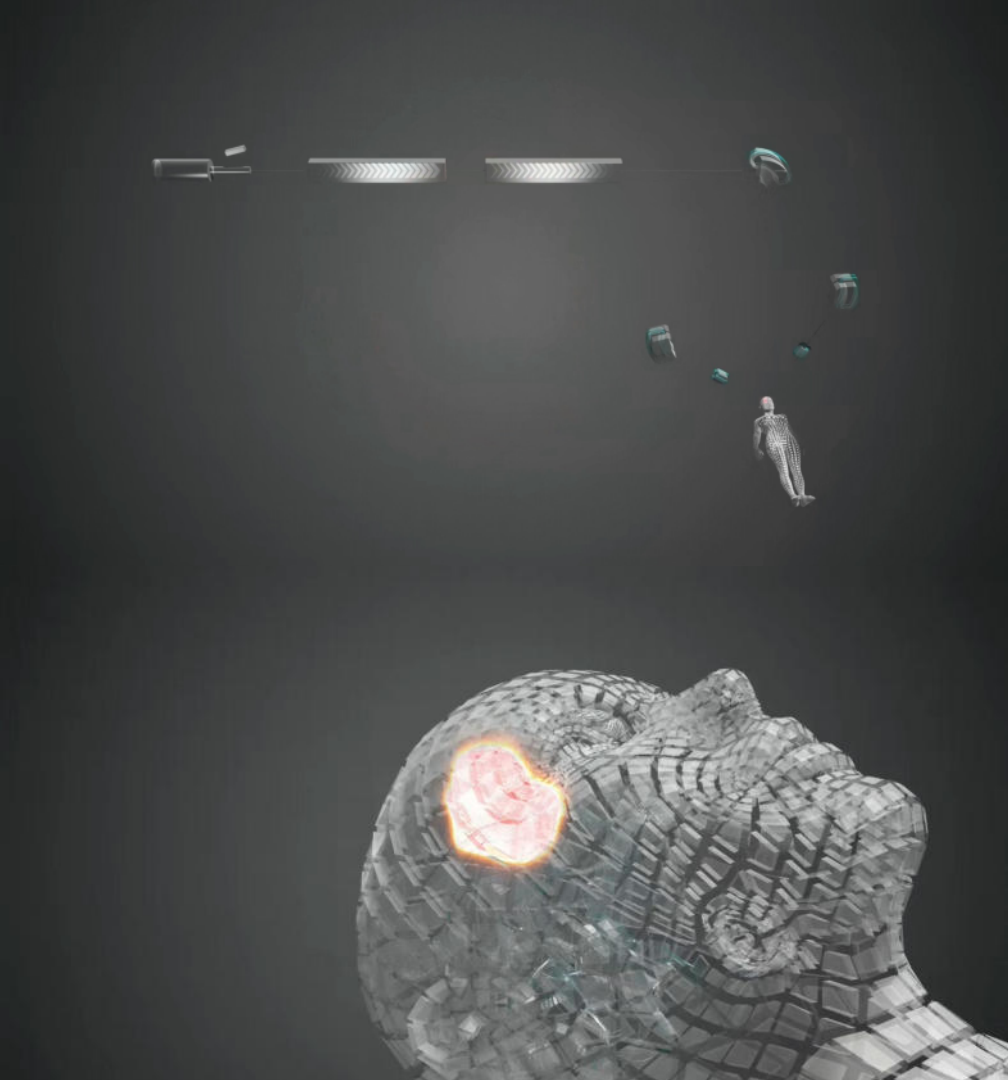
Treatment rooms

GaToroid

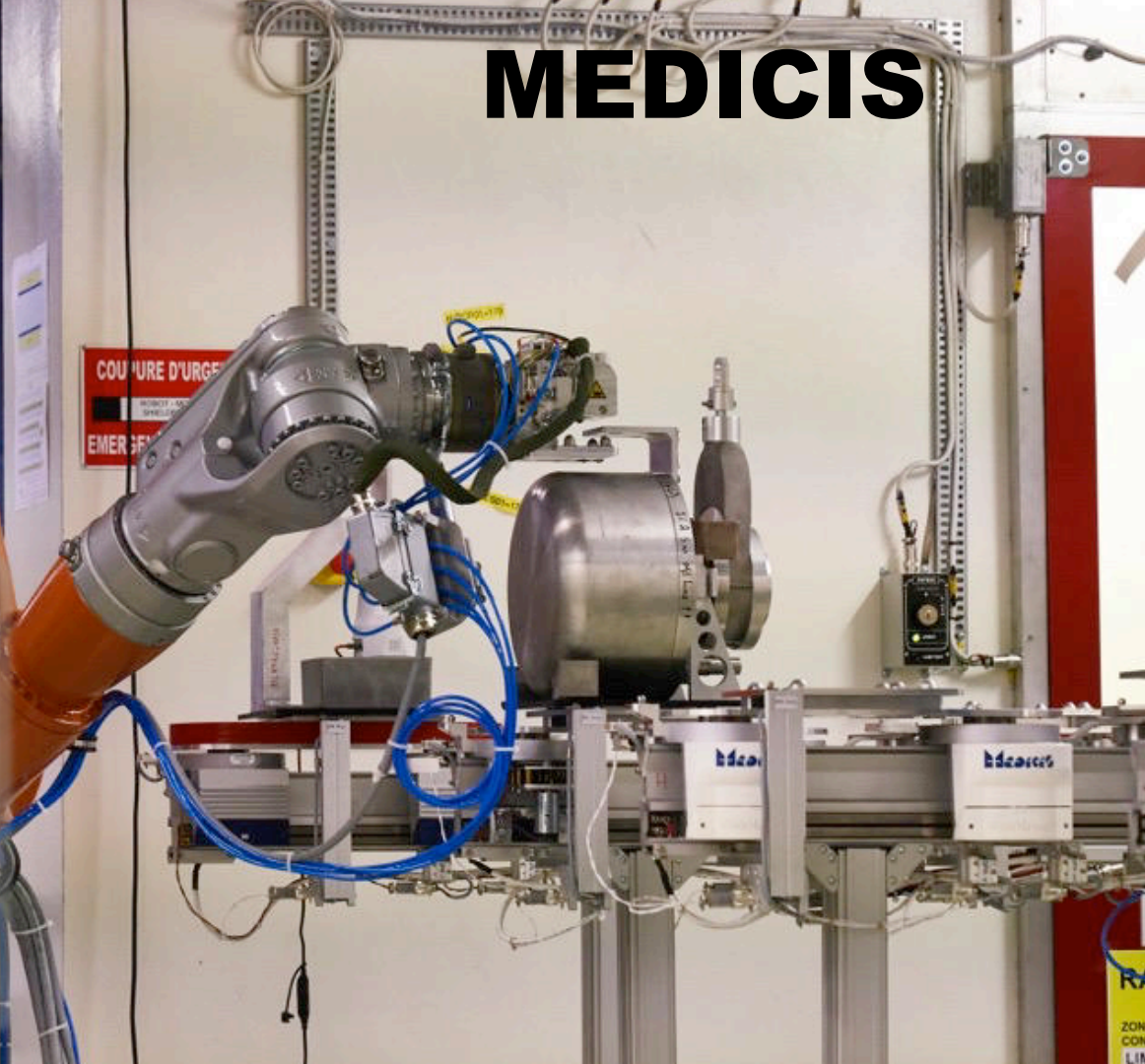


Accelerators Technology

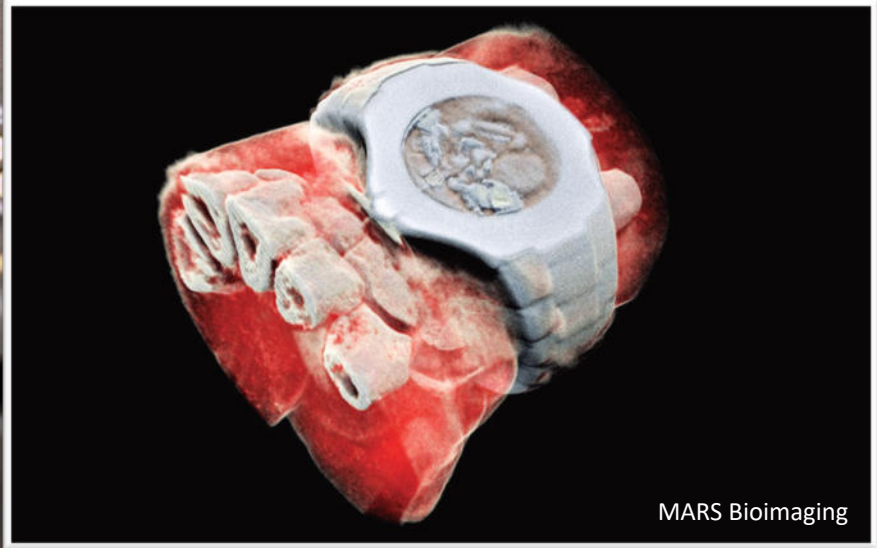
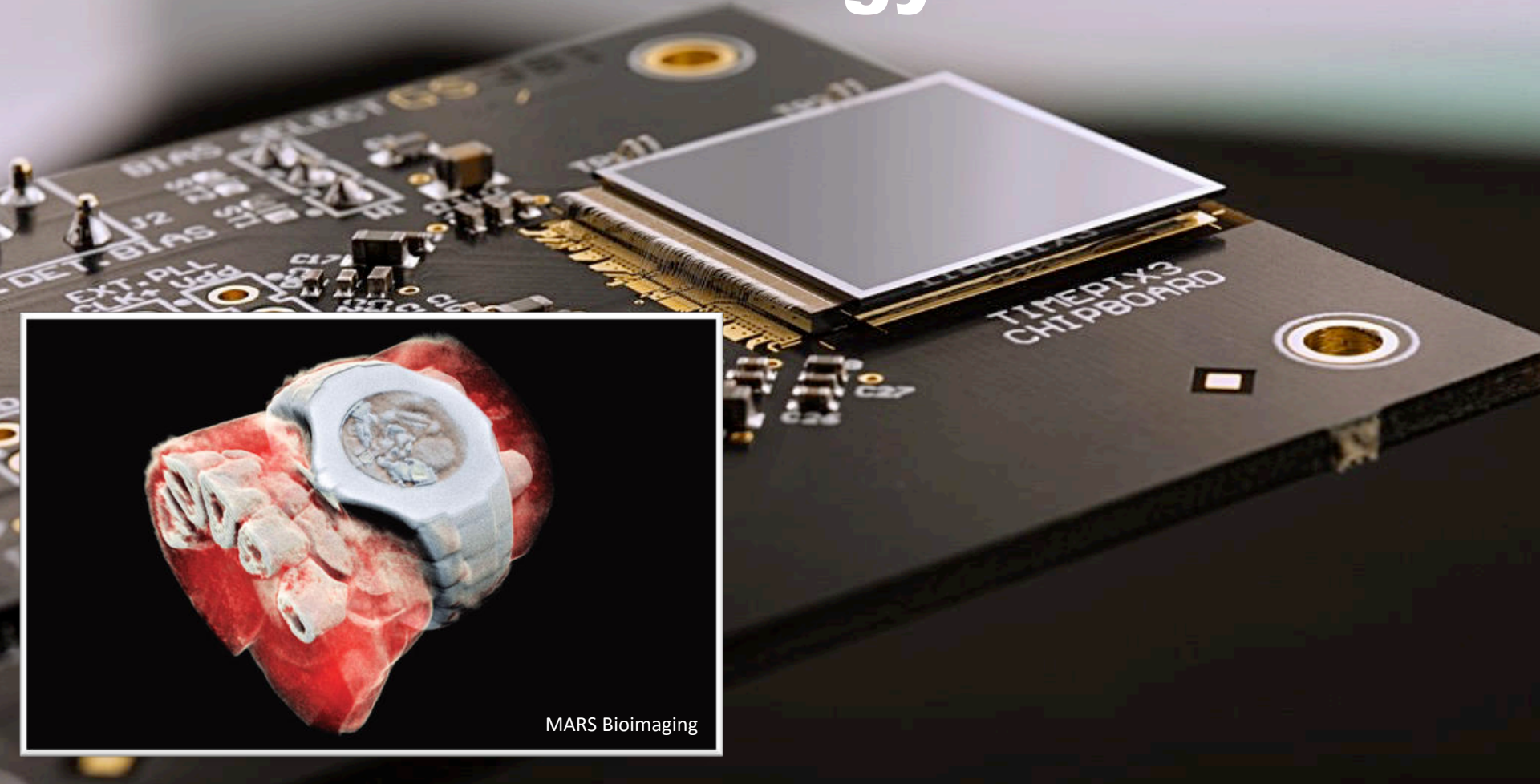




MEDICIS



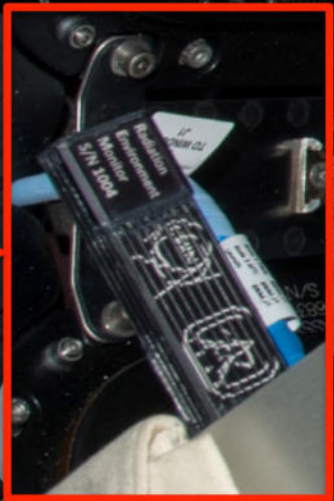
Detectors Technology



MARS Bioimaging

ISS

Courtesy of NASA

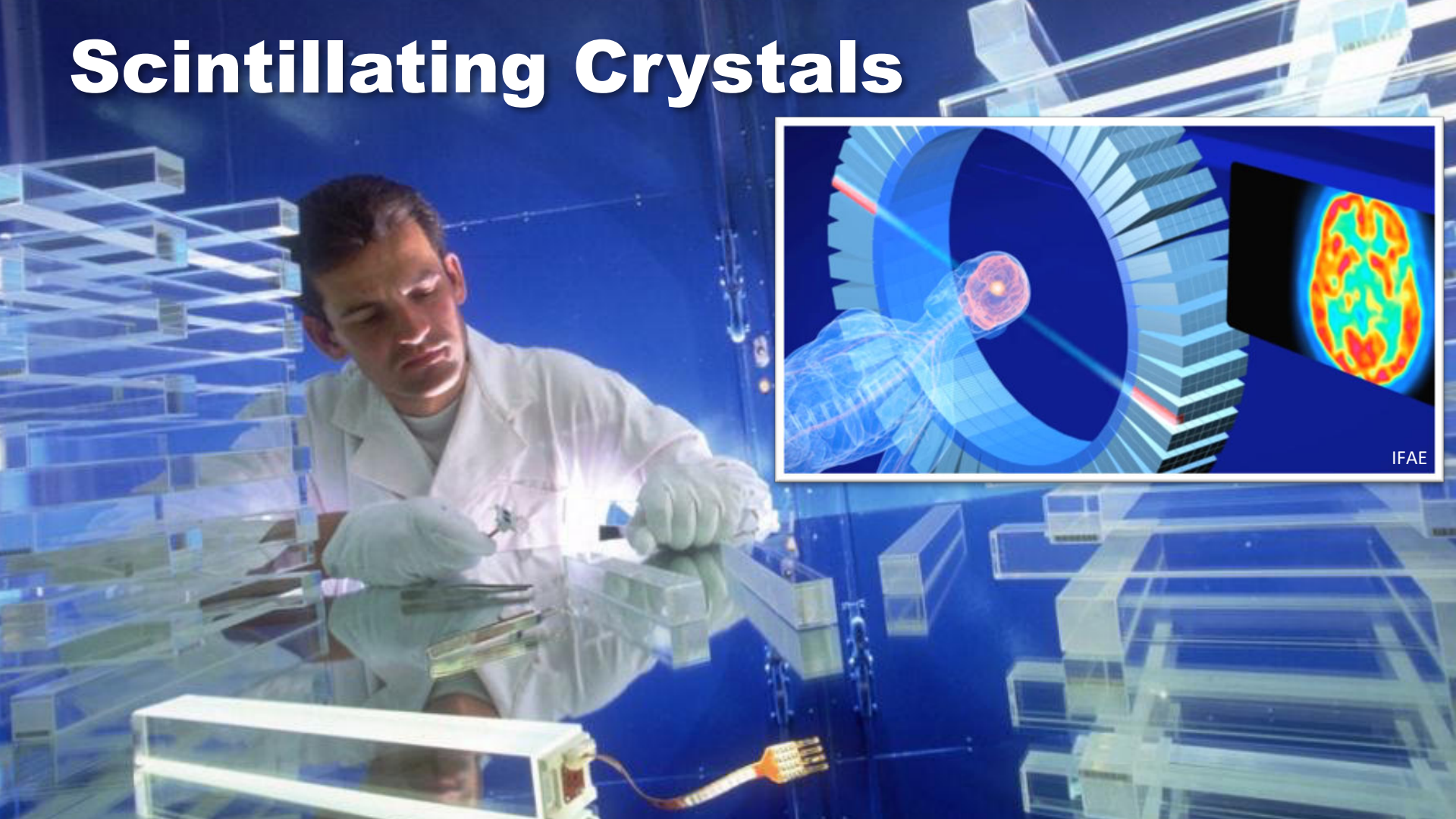


InsignArt



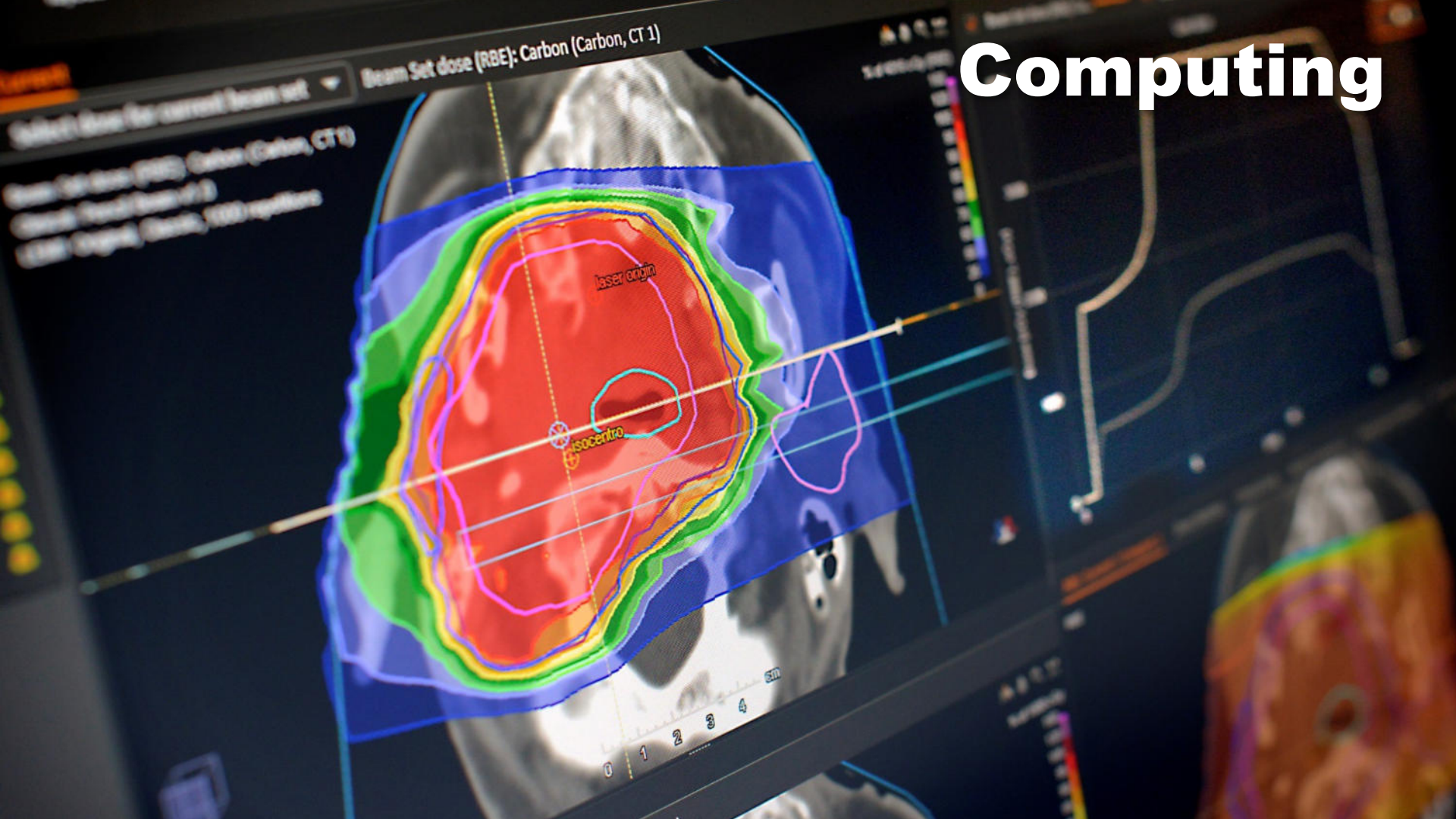
INSIGNART

Scintillating Crystals

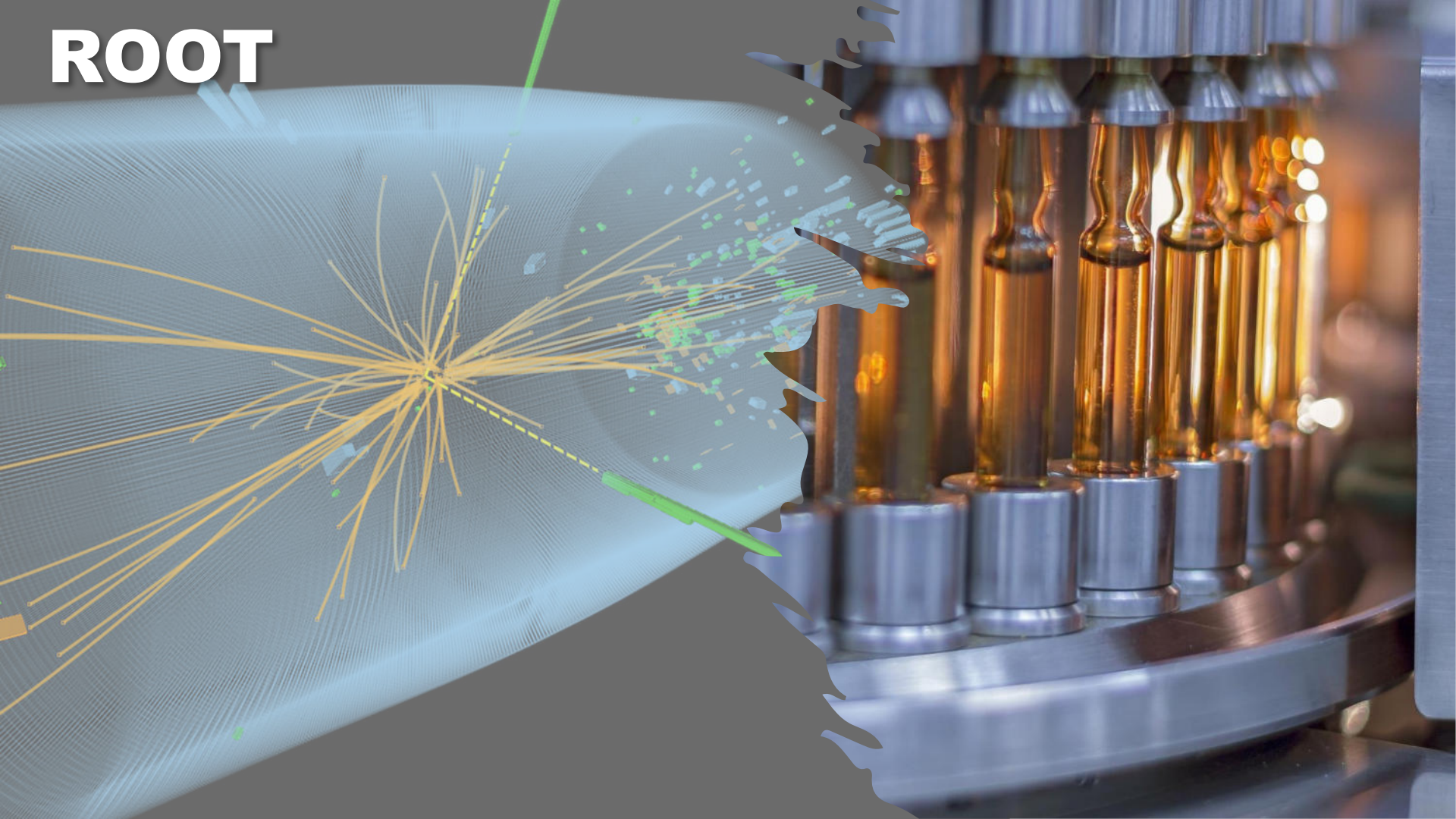


IFAE

Computing



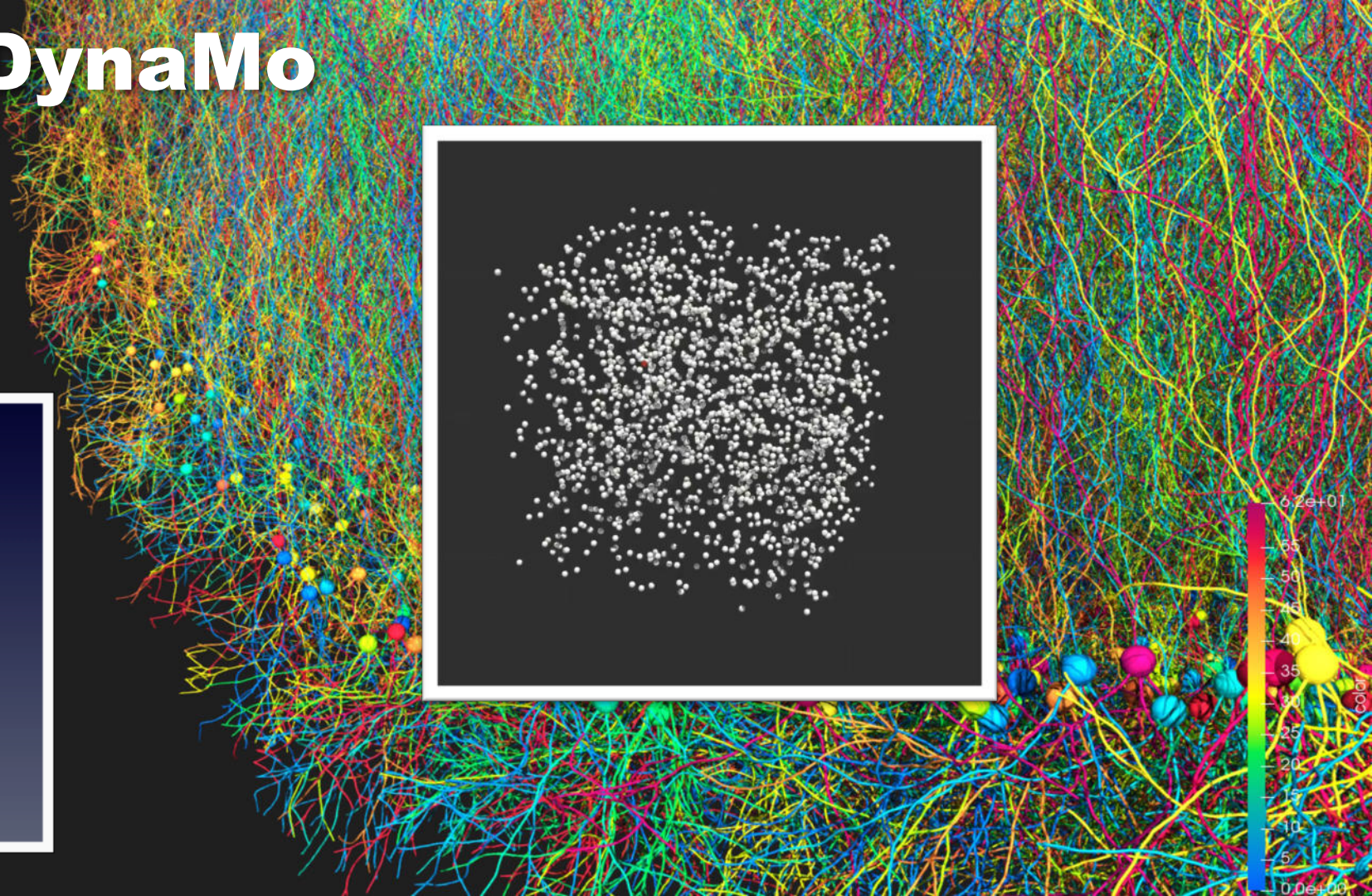
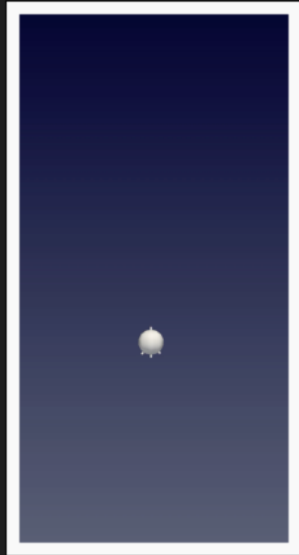
ROOT



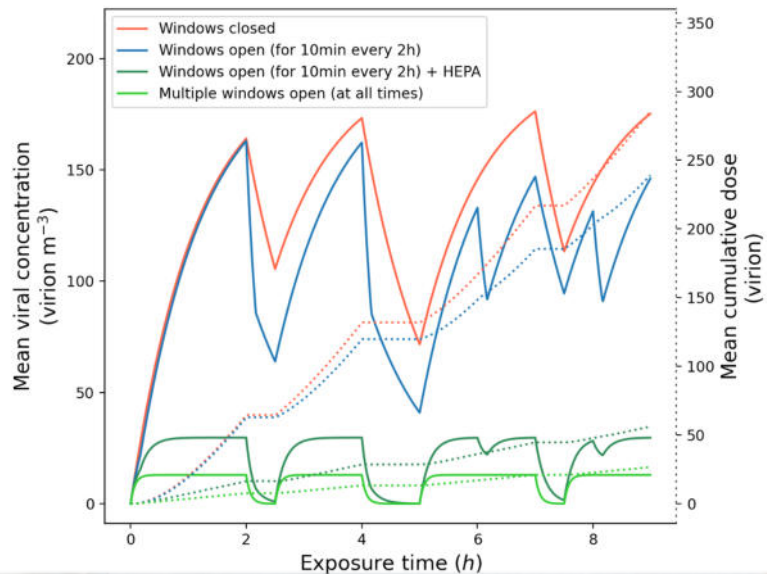
GeneROOT



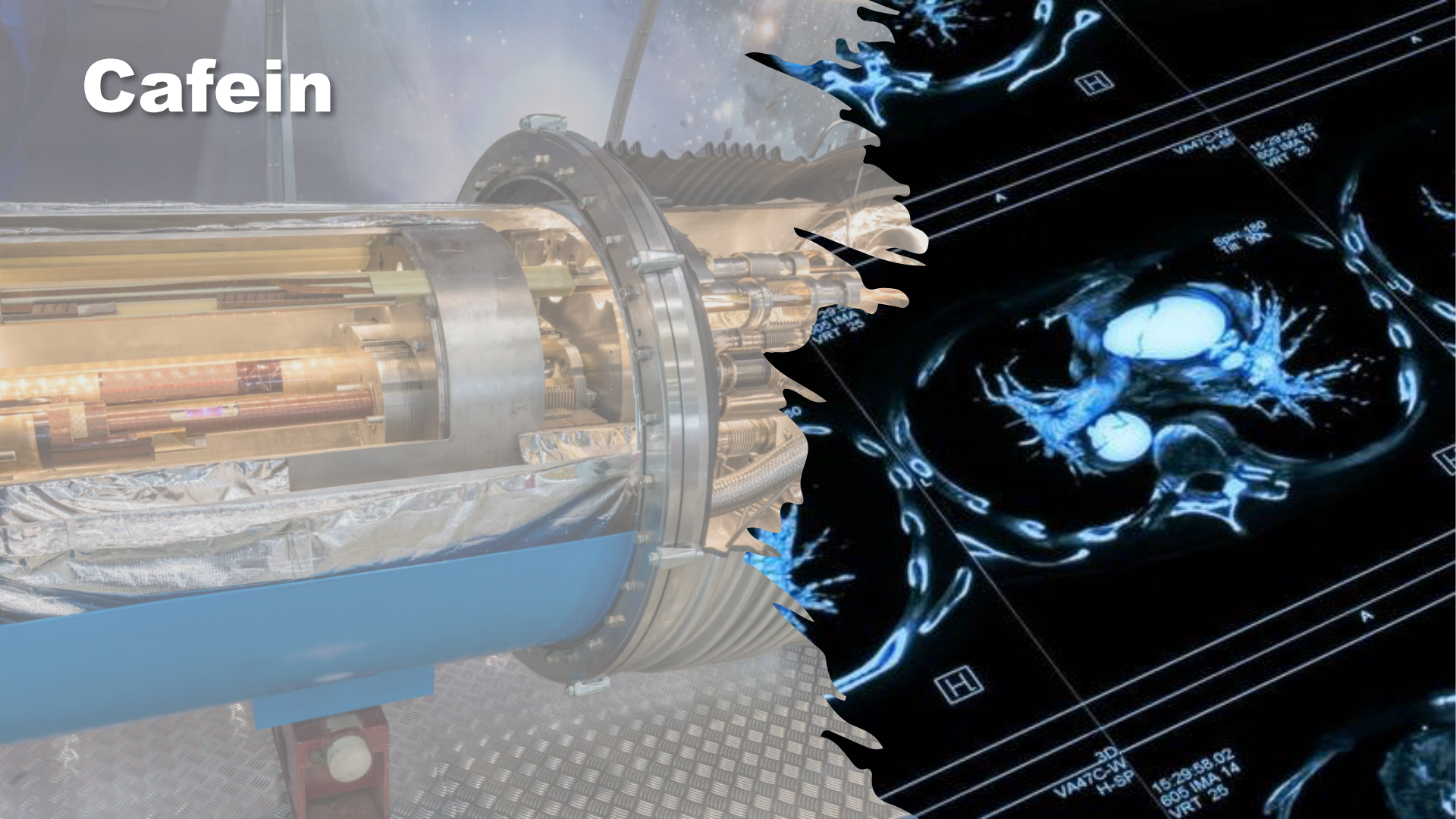
BioDynaMo



CARA



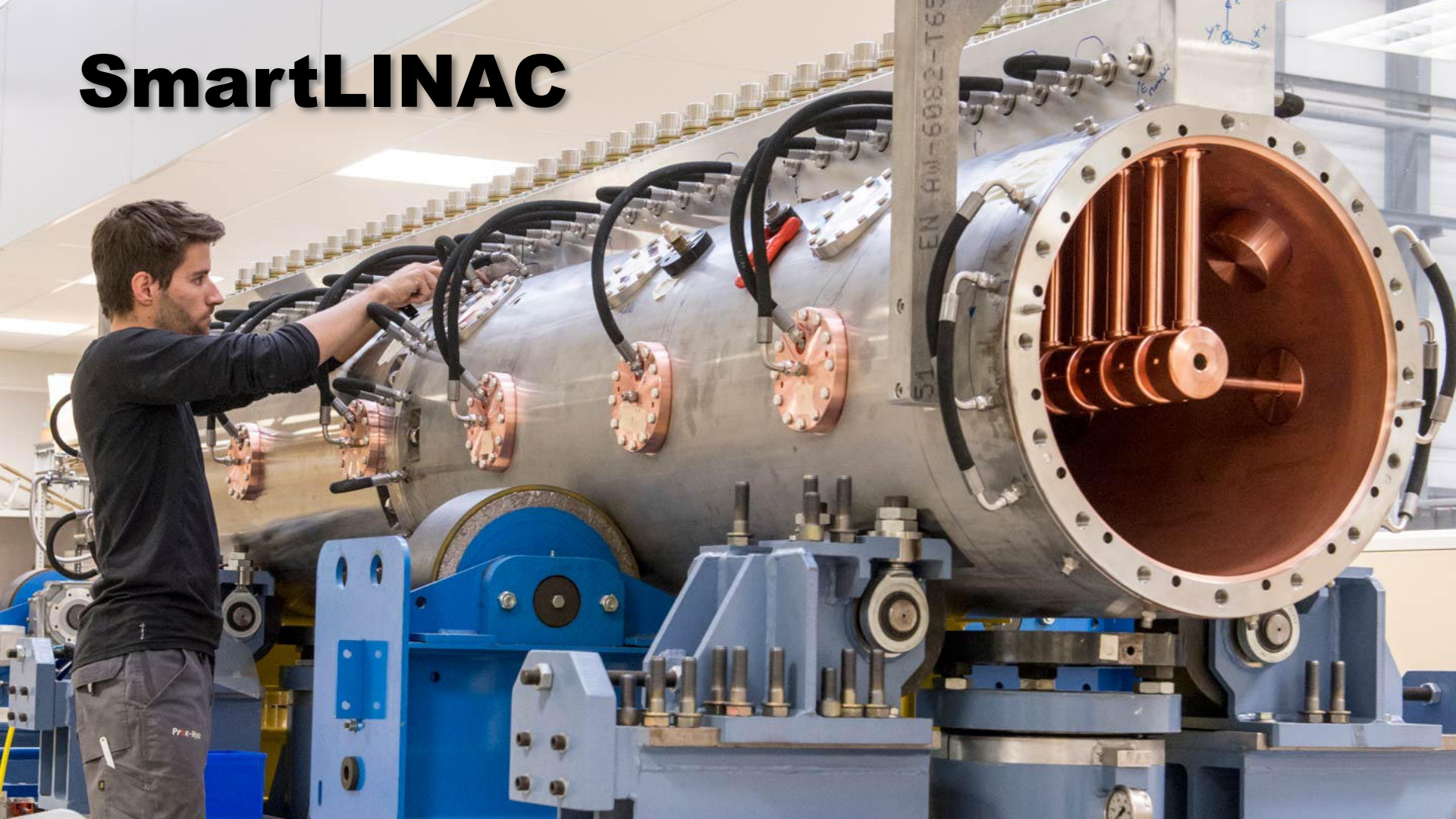
Cafein



Marchese



SmartLINAC



ZENSEACT



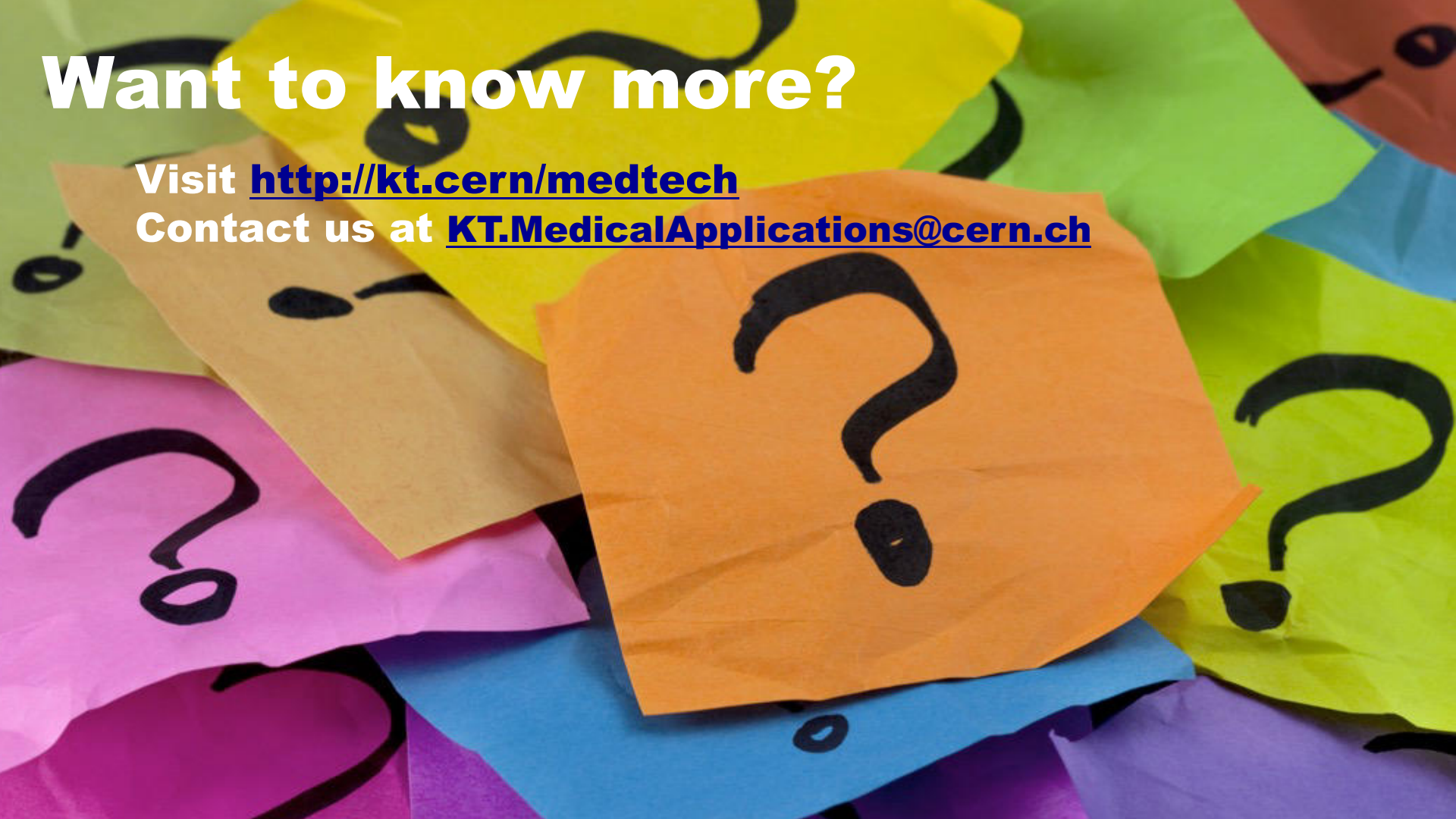
LivingLab



different signal over background by [1] or [2] or [3]
• Published for 2011 data
• Phys. Lett. B 710 (2012) 409–425 arXiv:1202.1487

Collaboration



The background of the slide is a collage of various colored paper scraps, including yellow, green, orange, pink, blue, and purple. Each scrap has a large, hand-drawn black question mark on it, creating a visual metaphor for inquiry and seeking information.

Want to know more?

Visit <http://kt.cern/medtech>

Contact us at KT.MedicalApplications@cern.ch