História

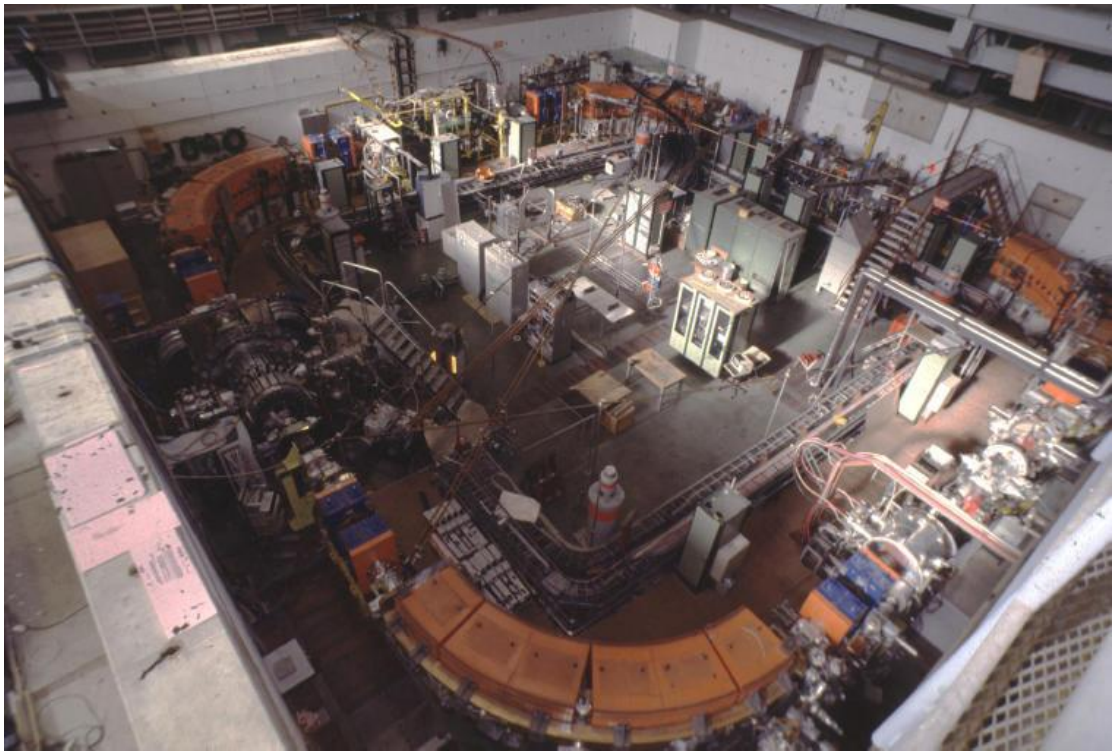
LEAR (Low Energy Anti-Proton Ring)

Desaceleração de anti-protões
(1982-1996)

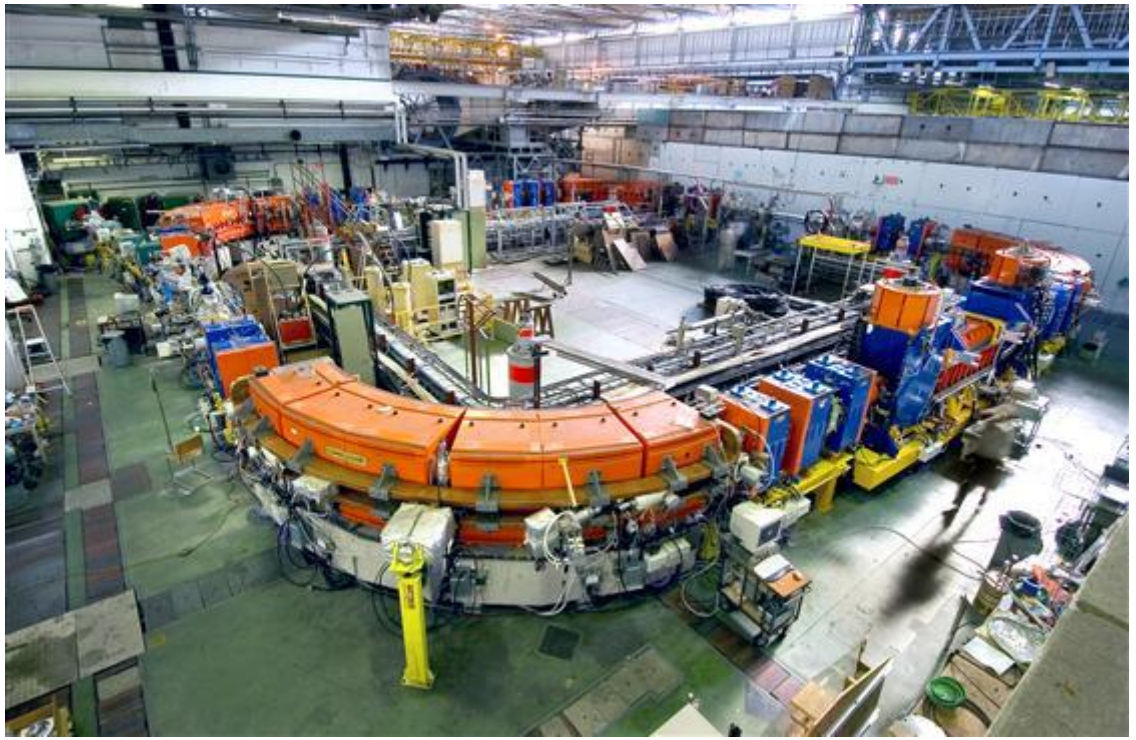
Descoberta do anti-hidrogénio
(1995)

Transformado no LEIR
(Low Energy Ion Ring)

injector de iões para LHC



LEIR (Low Energy Ion Ring)

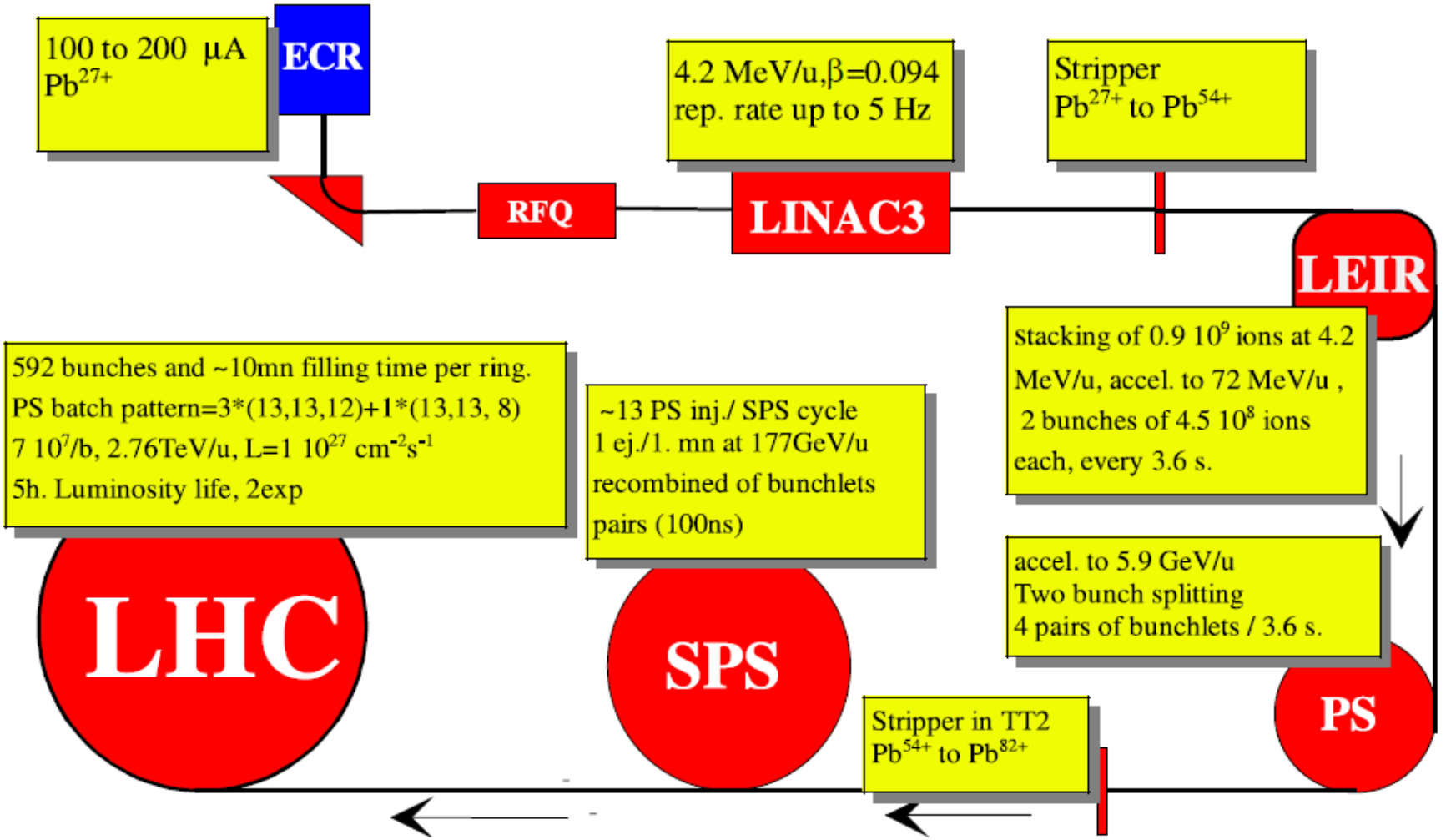


2003-2005 Adaptação do LEAR -> LEIR

2010 - Injeção dos primeiros iões Pb para LHC

O feixe de Pb é usado apenas durante 6-7 semanas/ano

Aceleração de 4.2 MeV (LINAC 3) a 72 MeV/u (LEIR)



A new cost-effective biomedical research facility

Radiobiological studies related to particle therapy:

relative biological effectiveness (RBE) of different ion beams

determination of carcinogenic potential of low particle doses

RBE for low fluences of high-energy, high-Z particles

beam requirements of ions up to iron, with energies up to 10 GeV/n ?

Other applications

Physics studies of ions beams, and development and testing of detectors and instrumentation for dosimetry

Space radiation protection research

Needed improvements

New power supplies could enable beams of up to about 400 MeV/n

new slow extraction system

installation of beam transport lines to the experimental end-stations

see
http://medicalphysicsweb.org/cws/article/opinion/49110

Consórcios Europeus

The European Network for LIGht ion Hadron Therapy is a multidisciplinary platform that aims at a coordinated effort towards ion beam research in Europe

http://cern.ch/ENLIGHT

PARTNER

Particle Training Network for European Radiotherapy

A Particle Training Network for European Radiotherapy (PARTNER) has been established in response to the critical need for reinforcing research in ion therapy and the training of professionals in the rapidly emerging field of hadron therapy.

http://cern.ch/PARTNER

In order to improve the quality assurance tools for hadrontherapy, the European Commission is funding ENVISION, a 4-year project that aims at developing solutions for: real-time non invasive monitoring, quantitative imaging, precise determination of delivered dose. fast feedback for optimal treatment planning, real-time response to moving organs, simulation studies.

Launched in February 2010, ENVISION is a collaboration of sixteen leading European research centres and industrial partners, coordinated by CERN.

http://cern.ch/ENVISION

ULICE

Union of Light Ion Centres in Europe

ULICE is a 4-year project set up by 20 leading European research organisations, including 2 leading European industrial partners (Siemens and IBA), to respond to the need for greater access to hadron-therapy facilities for particle therapy research. Project coordinator is the Italian Research Infrastructure Facility CNAO (Milan).

http://cern.ch/ULICE

ICTR-PHE 2012

Uniting physics, biology and medicine for better healthcare

A conference that brings together the International Conference on Translational Research in Radio-Oncology and Physics for Health in Europe

February 27 – March 2, 2012

http://cern.ch/ICTR-PHE12

Algumas das apresentações estão online