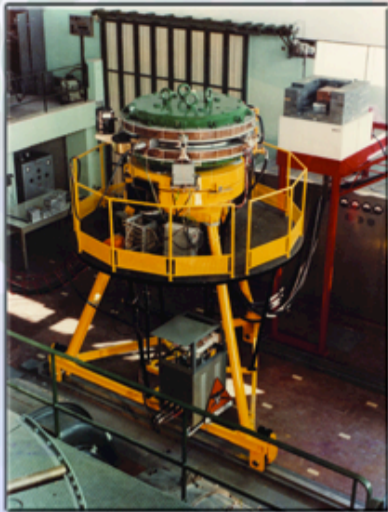


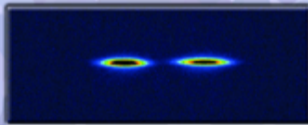
Laboratori Nazionali di Frascati

Where e^+e^- Colliders Were Born

While the DAΦNE ϕ factory operates at the luminosity frontier, accelerator development in Frascati is looking ahead to new concepts.



ADA was invented by Bruno Touschek and constructed at Frascati during the early 1960's. It was the first prototype for modern elementary-particle storage rings.

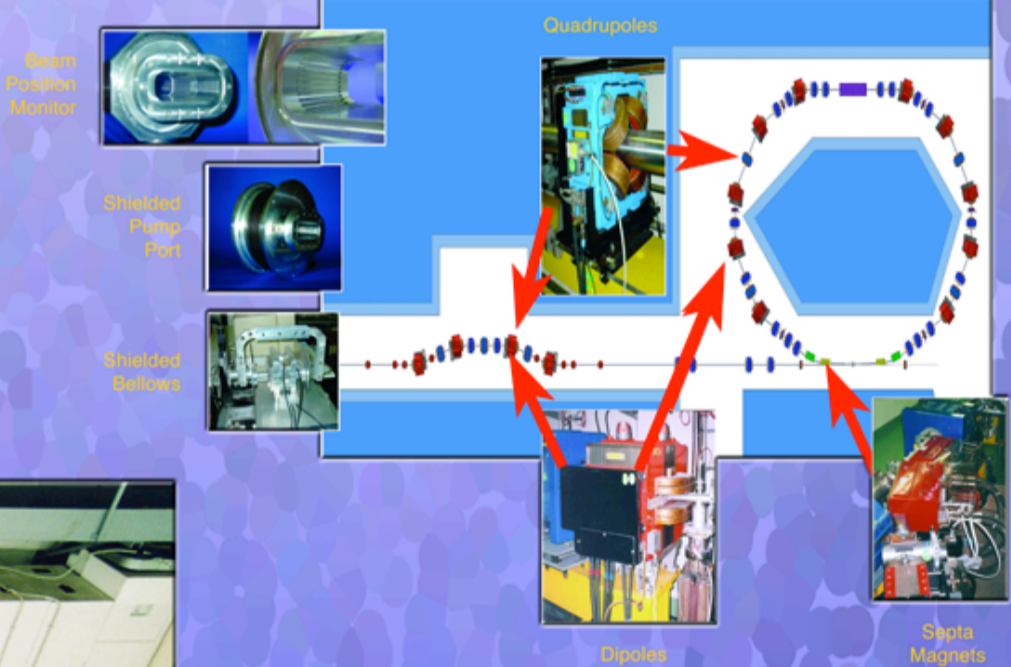


The e^+ and e^- beams can be actually seen by the computer's eye!

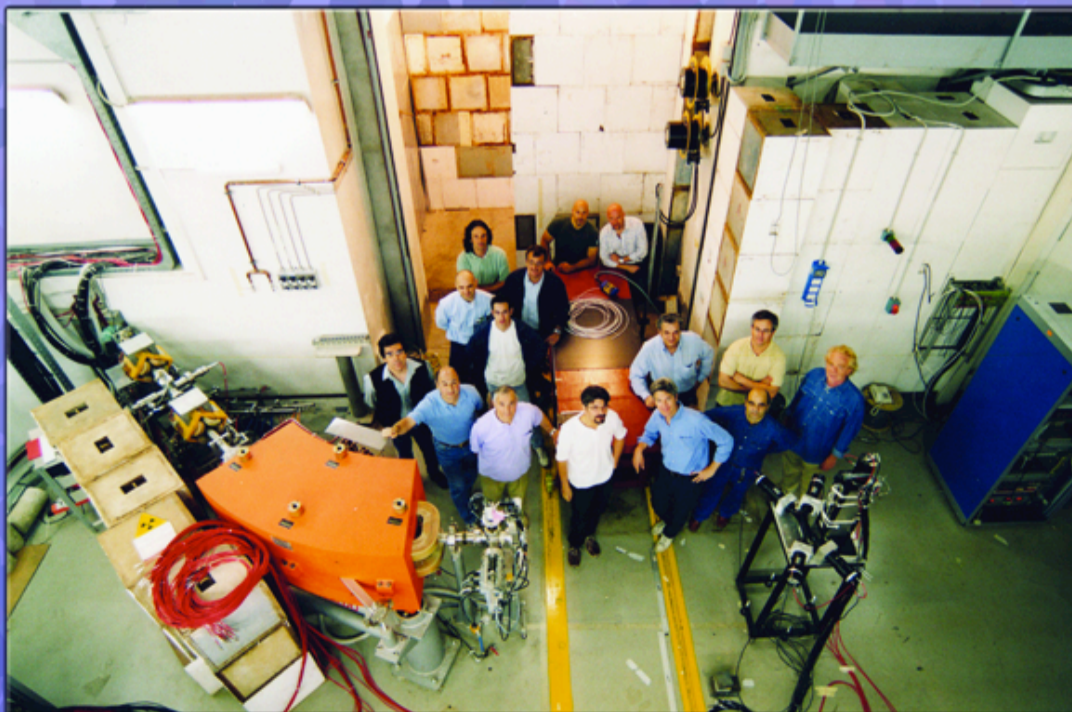


DAΦNE (Double Annular ϕ Factory for Nice Experiments) is the electron-positron collider currently in operation at Frascati. DAΦNE accelerates electrons and positrons, collides them, and produces copious numbers of ϕ mesons and their decay products, K mesons. By studying large numbers of collisions, it is possible to perform highly precise measurements and observe extremely rare phenomena. Accelerators that provide this capability are called particle factories.

A Free Electron Laser (FEL), which consists of a linear accelerator followed by an undulator magnet, produces a bright laser beam with a wavelength the size of an atom. Some of the exciting new experiments made possible by the development of such a novel radiation source involve creating matter from the vacuum, taking atomic-scale motion pictures of chemical processes that take only a few femtoseconds, and unraveling the complex molecular structures of individual proteins or viruses.



The Compact Linear Collider (CLIC) collaboration is exploring the prospects for beam acceleration by the interaction of two electron beams. The CLIC Test Facility, CTF3, will be built at CERN in order to demonstrate the feasibility of such a concept. INFN groups have designed the compressor system, and will construct and commission the delay loop and transfer line.



An extracted electron beam from DAΦNE is brought to the Beam Test Facility (BTF) for a wide range of applications, from detector development to material-science studies. The BTF is uniquely capable of delivering beam intensities from a single electron up to 10 billion electrons per pulse.