

How can electron beam energy be measured in a storage ring?

The energy of an electron beam in a storage ring can be measured with a relative uncertainty of few 10^{-3} from the integrated dipole field around the ring.

How do you adjust the electron beam in a storage ring?

The electron beam in the storage ring can also be adjusted by changing the field of the dipole magnets. The electron beam, consisting of two bunches separated by a half of the storage ring circumference, is used to drive the FEL. The FEL photons from the first (second) electron bunch collide with electrons in the second (first) bunch.

What determines the energy spread of a low-current electron beam?

The energy spread of a low-current electron beam in a storage ring is determined by the equilibrium between radiation damping and quantum fluctuations.

Which ring should maintain a stable electron beam?

To satisfy them, storage rings should maintain a stable electron beam. Due to the ultralow emittance and strong magnet fields of 4GSR, stability tolerances of the storage ring and beamline is tighter than the tolerances of 3GSR.

How bright is a photon beam from a storage ring?

Photon beam brightness from storage rings has been dramatically increased since the advent of the first-generation storage ring. Here, brightness takes into account the number of photons per angular divergence, the cross-sectional area, and a bandwidth of 0.1% of photon beam as a figure of merit for storage ring.

How does electron beam energy spread affect harmonic flux?

The electron beam energy spread can limit the peak harmonic flux from undulators, particularly at the high harmonics that are extensively used in medium-energy storage rings.

of the magnetic guide field. As a result, the electron beam energy in the storage ring VEPP-2M has been measured with an accuracy of $\pm 10^{-5}$ o I. INTRODUCTION A set of experiments to study ...

High-gain free-electron lasers (FELs) are driven by short, high-charge density electron beams as only produced at dedicated single pass or recirculating linear accelerators. ...

Introduction to Beam Dynamics in High-Energy Electron Storage Rings 3-2. significant amounts of power in the part of the electromagnetic spectrum ranging from the infra-red up to the ultra ...

Using this technique, we have successfully measured the relative energy spread of the electron beam in the Duke storage ring from 6×10^{-4} to 6×10^{-3} with an overall ...

electron beam damping rates at low ion energies and high equilibrium electron energy spread at high ion energies. This paper reports a development of a storage ring based cooler consisting ...

In this work, electron beam irradiation technology was used to increase the dielectric and energy storage performance of polypropylene (PP) films. Electron beam irradiation makes no difference on the crystal ...

The energy of an electron beam in a storage ring can be measured with a relative uncertainty of few 10^{-3} from the integrated dipole field around the ring. However, a more accurate ...

the electron beam energy and energy spread normalized by mc^2 , respectively; E_p is the laser photon energy; θ_0 and $k = E_p / (hc)$ are the Rayleigh range and wavenumber of the laser ...

Electrical Energy Storage Materials Project ID: ES095 This presentation does not contain any proprietary, confidential, or otherwise restricted information. ... Electron Beam; 10 Managed by ...

As a core, electron beam dramatically reduce the crystals size by two times. Hence, energy storage density of composites was enhanced, while energy loss was reduced under operating conditions. ... The 15 keV energy of ...