

Measurement of Transverse Emittance in ASTA at Fermilab

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August 5, 2013

1 Abstract

Transverse emittance is an important diagnostic for charged particle beams. The Advanced Superconducting Test Accelerator (ASTA) at Fermilab incorporates imaging targets and camera stations throughout the beam line, allowing real-time data acquisition at various energy levels and positions. Emittance Calculator, a new Java application to be run through the Accelerator Controls Network (AC-NET), performs analysis on these images, providing values for the size and divergence of the beam and its size in position-momentum phase space and calculating its emittance. This program is intended to be an interface with the camera stations and provide beam diagnostics to aid in the design and maintenance of ASTA.