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# Implementation of Quadrupole Scan Technique for Transverse Beam Emittance Measurements at Fermilab's Advanced Superconducting Test Accelerator (ASTA)

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Beam emittance is an important characteristic describing the quality of an electron beam. Transverse emittance
measurements based on the quadrupole scan technique (quad-scan) have been widely used to characterize the beam phase
space parameters in linear accelerators. This technique will be implemented at the Advanced Superconducting Test
Accelerator (ASTA) at Fermilab. We plan on deploying an automated quad-scan unit in the ASTA main control system
that permits an operator to accurately measure/analyze transverse beam emittance and flexibly control beam parameters
during the operation. This implementation is designed with Python scripts and ELEGANT tracking code in combination
with Fermilab's Accelerator Control System (ACNET). Preliminary results have been obtained using a small number of
quadrupoles using the "thin lens" approximation.

## Is this an abstract for a New Perspectives presentation?

Yes

## Is this an abstract for a Users Meeting Poster?

Yes

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