Characterization of the IOTA Proton Source

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Integral-Optics Test Accelerator (IOTA)

- Formed from the High Intensity Neutrino Source (HINS)
- Goals
  - integrable optics with non-linear magnets and with electron lenses
  - optical stochastic cooling of particle beams
  - innovative emittance exchange
- Storage ring
  - 39m in circumference
  - protons and ions
- Focus on injection into RFQ
  - Duoplasmatron
  - Nickel filament
Methodology

• Testing variables associated with beam current
  – Beamline solenoids (2)
  – Source solenoid, “Lens”
  – Horizontal and vertical trims
  – Gas pressure

• Systematic scans of one variable within a “safe” range
  – Dependent on cooling abilities of the source
  – Capacity of the “old” filament

• Adapt source to optimized parameters based on peaks of current measured
Results