

Emittance studies with the SNS H^- source

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Abstract. The Spallation Neutron Source* H^- source on the ion source hot spare stand is being used to study the emittance of the H^- ion beam injected into the SNS RFQ. The emittance measurements are performed with the LBNL Allison scanner that underwent several modifications. The slit width was optimized to improve the signal to noise ratio. In addition, the electric deflector plates were replaced with plates featuring a stair-cased surface. This modification has shown to suppress over 99% of ghost signals generated by the beam hitting the deflector plates. These modifications combined with noise suppression measures, and self-consistent analysis, yield highly accurate results. Measured emittances are presented as a function of several ion source parameters, including the ion beam current.

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