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# Phase-Space Characterization of SPIDER Beam Using an Allison Type Emittance Scanner

An Allison type emittance scanner has recently been installed in SPIDER, the full scale prototype of the negative ion source for ITER neutral beam injectors. The diagnostic is able to measure the phase-space distribution of the ion source beamlets, allowing to determine the emittance and Twiss parameters of the extracted beam. Their dependence on machine parameters is investigated, characterizing SPIDER optics during its operation with isolated beamlets. The presence of the secondary positive ion beam, produced by the interaction of the main beam with the background gas is detected. The non-linearities in the distributions are also assessed, measuring the beam halo and its dependence on the operating conditions.

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