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## CERN's IS03 H- Source Beam Formations Studies

CERN's H- Ion source is being operated at the new 160 MeV linear injector of CERN's accelerator complex. The source's plasma is of the RF-ICP type without magnetic cusp and runs under Cs-loss compensations. Filter- and e-dump magnetic fields generate a horizontal asymmetry. The H- beam is generated via volume and caesiated plasma surface modes, the latter inducing a radial current density asymmetry close to the plasma electrode. Asymmetries affecting the meniscus shape, or its current density can be simulated via 3D PIC-MC such the Orsay Negative Ion eXtraction code (ONIX). Validation of simulations requires Optical and Beam Emission Spectroscopy, emittance and profile measurements. The data can be compared to PIC-MC plasma parameters and beam form PIC-MC simulations coupled to beam transport codes, i.e. IBSimu. The parameter space covers RF-power, neutral's density, position of the RF coil and extraction field. Beams of H-, D- and protons were produced.

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