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Diagnostics of plasma and particle flows extracted from bipolar gridded plasma sources STANISLAV DUDIN, V N Karazin Kharkiv National University, Kharkiv UKRAINE, DMYTRO RAFALSKYI, Laboratoire de Physique des Plasmas, Ecole Polytechnique, Palaiseau FRANCE, ANE AANESLAND, CNRS, Laboratoire de Physique des Plasmas, Ecole Polytechnique, Palaiseau FRANCE — Gridded plasma sources have a strong interest from both industry and research community due to large number of their applications, including electric propulsion, plasma acceleration for fundamental studies, ion beam surface treatment and semiconductor etching, etc. Commonly, a dc electric field is applied between the grids of these sources to accelerate positive ions, while the space charge compensation of the beam is achieved using an additional external electron source. Few recent concepts assume bipolar extraction of particles, such that both positive and negative particles are extracted from plasma and accelerated. The formed beam can be composed of extracted continuously or alternately positive and negative ions, or positive ions and electrons. Diagnostics of these beams is a challenging task, in particular absolute flux and energy distribution measurements for different species present in the bipolar beam. In this work we present few recent diagnostic techniques allowing to measure absolute fluxes and energies of +/- ions and electrons, and also methods to investigate temporal behavior of these flows.

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