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# The New Ion Beam Extraction System for SMIS 37

The flat two-electrode extraction system was upgraded using a new approach to the extraction system design. It is based on the electrodes shape change which causes the redistribution of the electric field in the extraction region. The ion beam formation in the new geometry is more effective than in the flat one because of the more efficient accelerating field distribution. It broadens the available ion beam current density range.
The experiment was carried out using a pulsed high-current electron-cyclotron resonance (ECR) ion source SMIS 37 with high power (100 kW) and high frequency (37.5 GHz) heating. The experiment was focused on confirming the advantages of the new approach, such as: a considerable decrease in the optimal accelerating voltage; a significant decrease in the ion flux to the puller; the effective formation of ion beams with higher current density. Formation of a proton beam with current density of up to 1.1 A/cmˆ2 was demonstrated.

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