THE INFLUENCE OF THE GEOMETRY OF THE EMISSION HOLE AND THE STRUCTURE OF THE ACCELERATING CELL ON THE FORMATION OF A POWERFUL NEUTRAL BEAM FOR HEATING AND STABILIZING THE PLASMA [[1]](#footnote-1)\*)

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Powerful beam injectors of fast hydrogen atoms are widely used for heating and stabilizing plasma in magnetic confinement devices [1], review [2] presents the long-term experience of INP SB RAS in creating powerful atomic injectors based on positive and negative ions. This report is devoted to the study of the effect of the geometry of the emission hole and the structure of the accelerating cell on the formation of a powerful atomic beam in multi-aperture ion-optical systems (IOS). The design of an IOS is determined by many factors, such as the beam parameters, the type of plasma source used, and the available manufacturing technologies. The geometry of the first (“plasma”) electrode has the greatest influence on the angular characteristics beam [3]. Optimization and modernization of the geometry of plasma electrodes in the elementary accelerating cell for various IOS were carried out in order to improve the characteristics of the beams and simplify the manufacture of the electrodes. The geometries of the accelerating cell were analyzed using numerical simulations and tested in experiments. The results of these studies have been successfully implemented in the development of powerful atomic injectors  
in recent years (for example, [4]).

References

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1. \*) [abstracts of this report in Russian](http://www.fpl.gpi.ru/Zvenigorod/XLVIII/Mu/ru/AV-Brul.docx) [↑](#footnote-ref-1)