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## H2+ beams for Cyclotrons

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Several projects will require high beam current for H<sub>2</sub><sup>+</sup> either for neutrino factories and for applications. Different strategies have been envisaged, including overdense plasmas in microwave discharge ion sources (MDIS) and the recent developments in terms of production of high current high stability beams are satisfactory. The paper will describe the state of the art and the future optimization of the PS-ESS source, designed for protons, in order to fulfill the requirements of the above cited projects. In particular, the trial for correlating the relative H<sub>2</sub><sup>+</sup>/p abundance inside the plasma (by optical emission spectroscopy) and in the beam will be discussed.

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