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Recent improvements of the LPSC Charge Breeder

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The LPSC ion sources team develops the Phoenix Charge Breeder since 2000. The performances have been improved over time acting on the 1^+ and N^+ beam optics, the base vacuum and the 1^+ beam injection. A new objective is to increase significantly the plasma chamber volume to improve the plasma confinement, enhance the higher charge state production and the 1^+, N^+ efficiencies, and improve the ion source tunability. A development plan has been defined to modify the ion source magnetic structure accordingly with several steps in the period 2017 - 2020. The first iteration consists in increasing the axial magnetic field at injection from 1.2 T to 1.6 T by adding a plug under vacuum. It has been implemented in April 2017 and the efficiencies have been measured for gaseous and alkalis 1^+ beams. The results together with the foreseen evolution of the source will be presented.

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