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High Performance 18 GHz ECR Ion Source Development

At present,the ECR ion source is developing towards higher frequency,higher magnetic field technologies.However,18 GHz is the highest optimal operation microwave frequency for room temperature ECR ion sources,which can meet the needs of most of the existing heavy ion facilities.After the success of the 18 GHz ECR ion source LECR4,we developed the upgraded version source LECR5 aiming for higher beam intensity and higher charge state ions.With higher radial field, bigger plasma chamber volume,longer mirror length and flexible Bmin field, promising results have been made at the power level of ˜1.6 kW@18 GHz, for instance 81 eμA Bi32+, 22 eμA Bi41+.This ion source has been recently used for the heavy ion facility SESRI.Inspired by this outcome,a hybrid 18 GHz ion source called HECRAL has been proposed aiming for the similar performance of SECRAL at 18 GHz.This paper will present the recent update of LECR5 ion source commissioning and HECRAL ion source will be also introduced.

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