Abstract Submitted
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ECR-driven multicusp H^- volume source operated in pulsed or cw mode[1] PANAYIOTIS SVARNAS, JACQUE BRETON, PHILLIPE AUVRAY, MARTHE BACAL, Ecole Polytechnique - Palaiseau, LPTP TEAM — Electron cyclotron resonance (ECR) driven multicusp H^- volume hybrid source [1, 2] operates in continuous (cw) or pulsed microwave (2.45 GHz) mode up to 3 kW. The hydrogen plasma is produced between 1 and 7 mTorr by seven elementary ECR sources housed in the magnetic multipole chamber "Camembert III" [3]. This ECR configuration could be applied both to accelerator and fusion ion sources. Negative ion or electron extracted currents and plasma characteristics are studied in both modes with electrical measurements, electrostatic probe and photodetachment. The role of the plasma electrode bias in the values of the extracted currents is major. H^- current is maximized for a bias voltage close to plasma potential. An optimum pressure at 4-5 mTorr yields enhanced H^- density in the center of the chamber, under cw regime. Finally, the post-discharge formation of H^-, in the pulsed mode, is observed. [1] A.A. Ivanov Jr., C. Rouille, M. Bacal, Y. Arnal, S. Bechu, J. Pelletier, Rev. Sci. Instrum. 75(5), 1750 (2004) [2] M. Bacal, A.A. Ivanov Jr., C. Rouille, P. Svarnas, S. Bechu, J. Pelletier, AIP Conf. Proc. No 763 (Kiev, Ukraine) (2004) [3] C. Courteille, A.M. Bruneteau, M. Bacal, Rev. Sci. Instrum. 66(3), 2533 (1995)

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