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Magnetic Configuration of Magnet-embedded Lisitano Antenna and Sputter Source for High Current Metal Ions Generation[1] OLEKSII GIRKA, HYUN JONG YOU, National Fusion Research Institute — The magnetic drift of the fast electrons, due to the gradient and curvature of the magnetic field, plays an important role in the efficiency of the ECR plasma production in the multipolar magnetic field structure [1]. The objective of present research is to find the optimum magnetic configuration of the Magnet-embedded Lisitano antenna (MeLA) [2,3] and sputter source. The combination of the MeLA and sputter source is used for the high-density plasma production and successive high-current ion beam generation. The magnetic field gradient and curvature for the trapping higher density of the fast electrons are investigated via 3D magneto-static modelling of the MeLA and planar sputter. The results of 3-axis magnetic probe measurements are in good agreement with the results of magneto-static modeling. The ECR plasma parameters are also measured for Ar and Cu plasmas. The optimized magnetic configuration based on 3D magneto-static modelling and experimental plasma characterization is discussed. [1] T. Lagarde et al. Pl. Sources Sci. Technol. 6, 53 (1997); [2] G. Lisitano et al. Rev. Sci. Instr. 39, 295 (1968); [3] H.J. You et al. US8648534B2, KR10-1791350.

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