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Development of a volume production type hydrogen negative ion source by using sheet plasma SATOKI MATSUMOTO, TAKAAKI IIJIMA, AKIRA TONEGAWA, Tokai Univ, KOHNOSUKE SATO, Chubu Electric Power Co. Inc., KAZUTAKA KAWAMURA, Tokai Univ — Stationary production of negative ions are important to play an essential role in Neutral beam injection (NBI). Cesium seeded Surface-production of negative ion sources are used for NBI. However, Cesium seeded surface- production of negative ion sources are not desirable from the point of view of operating steady state ion sources. We carried out the development of negative ion sources by volume-production in hydrogen sheet plasma. Production of hydrogen negative ions through volume processes needs both high energy electron region and low energy electron region. The sheet plasma is suitable for the production of negative ions, because the electron temperature in the central region of the plasma as high as 10 – 15eV, whereas in the periphery of the plasma, a low temperature of a few eV of obtained. The hydrogen negative ions density were detected using an omegatron mass analyzer, while the electron density and temperature were measured using a Langmuir probe. Negative ions current extracted from the grid are measured by Faraday-cup.

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