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A numerical model of RF ion source for the ITER-relevant NBI

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With the development of magnetic confinement fusion, the new requirements and challenges are emerged for ITER NBI[1]. Briefly, It is required that the ion source of the neutral beam injection system should produce a uniform large volume high density plasma with the capability of long pulse steady state and long service life. Based on the EAST-NBI bucket ion source[2] where the main structure characteristics of large area high current ion source are introduced. In order to understand the radio frequency (RF) ion source this candidate for fusion NBI, here a numerical model of RF ion source is introduced, where the transport properties of electrons and ions are described based on the drift diffusion theory, The power coupling of RF power and plasma is analyzed, The influence of the external magnetic field on the plasma transport is also investigated.

Eligible for student paper award?

No

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