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## Study of SPIDER Beam Current Through Visible Light Measured by Beam Imaging Diagnostic

The injection of high-energy neutral beam of H and D is one of the most important heating system for future fusion nuclear reactor. SPIDER, the full-size prototype of the ITER negative ion source, is equipped with 15 visible cameras composing the tomographic diagnostic, which exploits the visible light emitted by the beam particles after the interaction with the background gas to characterize the beam. This light is proportional to the beam density itself, since the background gas in which they propagate is homogeneous. The light measured by the visible cameras can be compared with the electrical measurements of the beam current, by taking into account the dependence of the signal on the energy of the beam particles. The amount of light produced both by D and H negative ions beam is studied for different energies and background pressures, proving the capability of this diagnostic to estimate the beam intensity, along the entire beam profile.

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