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Laser-assisted H- stripping injection for the CSNS-II RCS

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For the high power spallation neutron sources, the laser-assisted H- stripping is a new essential technology. It can be an alternative to the foil stripping which may be used to overcome various difficulties faced by the stripping foils, such as short lifetime, high temperature, large radiation dose, etc. In this paper, based on the phase II of China Spallation Neutron Source (CSNS-II), the laser-assisted H- stripping injection method has been studied in depth. First, the physical principle of laser-assisted H- stripping injection is deeply explored theoretically. The influencing factors of laser and H- beam interaction, Lorentz stripping and other processes are studied. Second, the influences of injection beam parameters on the Lorentz stripping and laser excitation are studied, and the emittance growth of injection beam after stripping is explored. Finally, based on the beam parameters of the CSNS II, the design scheme of the laser-assisted H- stripping injection has been proposed.

Footnotes

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