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A method of diagnosing magnetized plasmas using Raman scattering[1] MINSUP HUR, MYUNGHOON CHO, YOUNGKUK KIM, Ulsan Natl Inst of Sci & Tech — We propose a method to diagnose a magnetized plasma using Raman scattering. It is found from the X-mode dispersion relation that the frequency of the backward scattered wave is downshifted by an amount of upper hybrid frequency, while that of the forward scattered wave merely depends on the magnetic field. Such a spectral difference is used to measure simultaneously the plasma density and magnetic field of magnetized plasmas. The idea was verified by a series of 1D PIC simulations, where we used the directional field splitting method to obtain accurate peak position of the scattered waves' frequencies. Theoretical expectation of the frequency shift and the growth rate gives a possibility to applying diagnostics of Tokamak.

[1]plasma diagnostics

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