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PhD Thesis Abstract

Study of the effect of impurities on intrinsic of Tokamak plasmas

Controlling thermonuclear reactions in nuclear fusion is one the most challenging tasks for humankind. The tokamak is at present the most promising device for magnetic confinement fusion as it has confined fusion plasmas for longest time till date. Rotation and rotational shear are very useful and advantageous for plasma transport and to increase plasma instability. Currently, NBI is the most effective way to rotate the plasma. In future fusion devices like ITER, it will not be possible to rotate the plasma through NBI. Thus, the study of intrinsic rotation becomes of the utmost relevance. Parra, Barnes et al. proposed a gyrokinetic model to explain intrinsic rotation. This new momentum transport model is being implemented in the code GS2. In this PhD project the modified GS2 code will be benchmarked with other codes as well as experimental data. The code will also be extended to include the study of impurity effects on rotation with second order corrections.