



Physics Colloquium

Friday, 12 February 2010, 4:00pm, PSC 3046

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Parametric Instabilities in Inertially and Magnetically Confined Plasmas

Three- and four-wave parametric processes in plasmas have been a subject of much experimental and theoretical study in recent years due to its relevance to laser-driven inertial confinement fusion (ICF), magnetic fusion, charged particle acceleration, radiation generation and space plasmas. In the presence of self-generated multi-megagauss magnetic fields, plasma supports a much wider variety of modes, opening up a large number of parametric instability channels. In the heating of tokamaks high power electromagnetic waves may be susceptible to parametric instabilities in the resonance region as well as in outer region of the plasma. The high frequency radio waves have been serious efforts to influence drift waves and other micro-instabilities in tokamaks. Ionospheric modification experiments conducted with high-power RF waves reveal non-linear coupling of the launched RF wave with the long wavelength modes.