Abstract Submitted
for the DPP05 Meeting of
The American Physical Society

Hierarchy of beam plasma instabilities up to high beam densities for Fast Ignition Scenarii ANTOINE BRET, ETSI UCastilla de la Mancha Spain, CLAUDE DEUTSCH, LPGP UParis XI France, BRET TEAM, DEUTSCH TEAM — We investigate the hierarchy of electromagnetic instabilities suffered by a relativistic electron beam(REB) passing through a plasma. We work in a fluid approximation and consider beam densities up to plasma ones. The hierarchy between instabilities is established in terms of only two parameters: beam relativistic Gamma factor and ratio Nb/Np of beam to plasma densities. For Nb/Np < 0.53, most unstable modes are a mix of Filamentation and 2-Stream instabilities. Beyond that limit, Filamentation may be dominating, depending on beam Gamma factor. Growth rates behavior for Nb/Np ~ 1 leads to conclude that a Fast Ignition Scenario REB could experience a very high instability level at earliest stages of its journey through supercompressed DT core.

Claude Deutsch
LPGP Université Paris XI

Date submitted: 02 Aug 2005 Electronic form version 1.4