

**Experimental Coupling of 35 Ghz RF-Cavities with an Intense Bunched Electron Beam\***,  
J. GARDELLE, T. LEFEVRE, G. MARCHESE,  
M. PADOIS, J.L. RULLIER, CEA-CESTA;  
J.T. DONOHUE, CENBG - We present the first utilization of a FEL-bunched electron beam in the framework of Two Beam Accelerator studies. A 2.2 MeV, 800 A electron beam, produced by the induction accelerator LELIA, is bunched at 35 GHz by the FEL interaction. It is then extracted from the wiggler by a suitable adiabatic exit. A solenoid is used to produce a narrow beam waist downstream at the position of a 35 GHz resonating cavity. In particular, we have tested the so-called "idler" cavity, a closed RF-structure which can be slightly detuned from the resonant frequency in order to enhance bunching. Optical measurements are performed to analyze the effects of the beam-cavity interaction on the longitudinal profile of the electron beam.

\* This experiment is performed in collaboration with the CLIC group at CERN and with the RK-TBA group at LBNL.