

First Tests of the 250 keV Electron Source and Beamline for the TESLA Test Facility Injector,

J. FUSELLIER, M. JABLONKA, J.M. JOLY, Y. LUSSIGNOL, CEA, DSM/DAPNIA/SEA, CE-Saclay, F-91191, Gif-sur-Yvette; M. BERNARD, J.C. BOURDON, T. GARVEY, M. OMEICH, N. SOLYAK, LAL, IN2P3-CNRS, Orsay, France - The TESLA Test Facility Injector uses an electron source consisting of a 30 kV thermoionic triode gun followed by an electrostatic accelerating column to increase the beam energy to 250 keV. The gun cathode voltage is modulated at 217 MHz to provide sub-nanosecond micropulses within the 800 microsecond macropulse. The beam is then transported to a superconducting 'capture' cavity through a 4 m long beamline equipped with solenoidal focusing lenses, a 217 MHz pre-buncher cavity, and several beam monitors. The gun, its associated electronics and the transfer beamline have been assembled and tested. We present the first measurements of the beam emittance under the nominal operating condition of 8 mA average current in the macropulse. These measurements are found to be consistent with measurements made on the 30 kV gun alone and simulations of the electrostatic column.