

Experimental Investigations on Geometrical Resolution of Electron Beam Profiles given by OTR in the GeV Energy Range, X. ARTRU, IPN-Lyon; M. CASTELLANO, L. CATANI, P. PATERI, INFN-Frascati; R. CHEHAB, M. TAURIGNA-QUERE, P. THOMAS, A. VARIOLA, LAL Orsay; D. GIOVE, INFN-Milano; L. WARTSKI, IEF Orsay; K. HONKAVAARA, SEFT-Helsinki and LAL-Orsay -

Optical Transition Radiation (OTR) provides an attractive method for measuring beams of small dimensions at high energies (GeV). However, some limits on the geometrical resolution, at very high energy have been often discussed in the literature and a minimum value given by $\lambda\gamma$ has been conjectured. In order to bring an experimental contribution to the problem systematic measurements of electron beam profiles, in the energy range 1 to 2 GeV and for optical wave length ranging from 400 to 700 nm, have been worked out at the Orsay linear Accelerator. OTR emitted from a foil put in the beam was collected by a 2-lens telescope and recorded by an intensified camera, with large enough sensitivity and resolution. The beam profiles measured with OTR were compared to profiles obtained with an Sem-Grid having a resolution better than 0.5 mm and placed close to the OTR radiator. The results clearly show that the OTR geometrical resolution at GeV electron energies is better than the often invoked $\lambda\gamma$ limit.