

Electro-Magnetic Bunch Length Measurement in LEP, L. VOS, CERN - Bunch lengths between 3 and 12 mm have been measured routinely in LEP in 1997 with a small (7 mm diameter) button electrode. The measurement method is based on the spectral analysis of the electrode signal and relies on the fact that the transfer function of the complete set-up, including the signal cable, can be computed rather exactly thus eliminating the need for external calibration. The information of beam intensity is recovered as a by-product. It provides an interesting internal validation of the measurement by comparison with the normal intensity measurement. The system has been used to detect subtle but real bunch length changes with bunch intensity which can be attributed to the inductive impedance in LEP. A value for the imaginary (inductive) longitudinal impedance is derived from the observations. An indication for the resistive part of the impedance is given as well.