Beam Dignostics abstract

All accelerators must be able to measure beam parameters to the required precision. Only when being able to “see” the beam, the machine can be correctly adjusted and beam can be produced reliably. Dependant on the beam property to be determined, different types of instruments are employed. Scintillating screens are used to visualize the beam spot, Faraday Cups or beam current transformers measure the beam intensity, secondary emissing grids or wire scanners determine the transverse beam distribution and wall current monitors the longitudinal distribution.

During the first part of the lectures these different types of sensors are presented and their interaction with the beam is explained. The objective is to understand the physics of the instrument itself. In the second part typical applications are shown and the measurement of more elaborate accelerator parameters like energy spread, tune etc. are explained. Recently obtained results from LHC are presented as well as results from smaller, lower energy machines.