



Contribution ID: 18

Type: not specified

# Modular telescope based on scintillating fibres coupled with low noise silicon photomultipliers

*Wednesday, 17 January 2018 17:05 (15 minutes)*

A modular telescope composed of four X/Y scintillating fibre tracking stations has been developed and employed to test the LHCb-SciFi 2.5m long modules. The fibres are read out by silicon photomultiplier arrays characterised by a low correlated noise, high photodetection efficiency and very good stability on a wide operational range. A single hit spatial resolution smaller than 40 $\mu$ m was measured during the testbeam campaign performed this fall on secondary particle beam at the CERN North Area, with the resolution on the track at the position of the DUT estimated to be 16 $\mu$ m. The hit efficiency was measured to be ~99%. Two main optimisation directions are being considered: to introduce timing measurement with time resolution of ~1ns, based on the fast signal coming from the SiPMs and limited only by the decay time of the fibre scintillator, and the possibility to increase the active surface allowing large area DUTs. This contribution will describe the results on the performances obtained with the current configuration and cover the main ongoing developments.

**Primary author:** Mr GIRARD, Olivier (EPFL, Lausanne, Switzerland)

**Co-authors:** Mr KUONEN, Axel (EPFL, Lausanne, Switzerland); Dr GUIDO, Haefeli (EPFL, Lausanne, Switzerland); Dr STRAMAGLIA, Maria Elena (EPFL, Lausanne, Switzerland)

**Presenter:** Mr GIRARD, Olivier (EPFL, Lausanne, Switzerland)

**Session Classification:** Beam Telescopes