

## 8th Beam Telescopes and Test Beams Workshop



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# UA9 Test Beams for Bent Crystal Studies - Experience and Results

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In the last 10 years, the UA9 collaboration has used the H8 line in the North Area of the CERN SPS; the aim of the tests was to investigate coherent interaction physics of charged particles with bent crystals and to characterize their properties and performance for application in circular accelerators (SPS and LHC).

A telescope tracker, based on CMS inner tracker silicon strips, was developed and optimised for bent crystal investigation. The telescope has been improved by linking it to an external fast trigger and to other detectors for nuclear interaction studies. It is also a powerful device for monitoring of the beam line where it is installed. During LHC Run 1 and 2 beam was consistently delivered by SPS to the North Area; about 4-5 weeks per year were granted to UA9 for test beams. The crystals were developed for several applications, namely beam collimation, beam extraction, and beam manipulation (beam focusing/defocusing). The test beams have been carried out with various beam species, both protons and ions (Argon, Xenon and Lead), and different energies (in the range of hundreds of GeV per nucleon).

An overview on the experimental set-up and the results of the different measurements taken during the CERN Run 2 (2014-2018), during which more than 200 crystals were tested, will be presented.

**Primary author:** ROSSI, Roberto (CERN)

**Presenter:** ROSSI, Roberto (CERN)

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