Mini workshop on laser based alignment systems

30 January 2014 - 31 January 2014

CERN

Scientific Programme

Issues to be discussed:

Laser beam as a stable reference:

- diameter of the beam w.r.t length, optimal laser wavelength
- stability of the beam, stability of the laser source
- is vacuum needed? Over which distances? Which vacuum? Other solutions: helium?
- Impact of temperature, humidity and other parameters
- How to be sure of the straightness of the beam? Additional instruments used such as beam expander, lens, diaphragm?

Sensors:

- Which type of sensor?
- Impact of the diameter of the beam / longitudinal distance / shape of the laser spot
- How to attach a sensor to a component, and measure w.r.t. a laser beam under vacuum?
- How to transfer the position of the laser beam outside the vacuum pipe without any constraints?
- Rad hard sensors
- N sensors along the beam line, with N > 200
- Algorithm for image processing? Software used? Number of measurements to determine beam position?
- Sensor size / weight / resistance to vacuum, radiations / price

How to validate the global solution: laser beam and sensors?