

Could the AT401 replace digital levelling and “Ecartometry” for the smoothing and realignment of the LHC ?

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The laser tracker AT401 appeared on the market a couple of years ago. It is equipped with a very accurate distance meter, inherited from the Mekometer ME5000, and angular encoders almost as accurate as those of the best total stations. For the smoothing and realignment of the LHC components, the Survey team at CERN normally uses digital levelling measurements to determine the vertical position and offsets to a stretched wire measurements, also called ecartometry, for the horizontal. During the last winter technical stop, a measurement of an LHC sector was carried out using these three technologies in order to compare the AT401 capabilities with the others. The paper will present the methodology applied, the data processing, the results obtained and the conclusions drawn for the future LHC realignment campaign which will take place during the long shut-down of 20 months in 2013 and 2014.

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