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VALIDATION OF AN OPTICAL WPS SYSTEM

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For the Compact Linear Collider (CLIC) project an active pre-alignment system is planned to be used with thousands of wire position sensors (WPS). The capacitive WPS technology used at CERN is rather expensive and limited to the use of conductive reference wires. Alternative sensor and wire solutions are studied.
Open Source Instruments Inc is developing a CCD camera based WPS. This sensor uses the cameras and electronics of the Brandeis CCD Angle Monitor (BCAM) used in several LHC experiments. Prototypes of this sensor have been tested for its different characteristics, such as resolution, stability, linearity, dynamic range and absolute calibration. A particular focus has been put on the combination of light-weight and strong vectran wire with this optical sensor.
In this paper, the sensor design is presented, followed by the results of the tests carried out with sensors and wires. The future developments needed for an off-the-shelf sensor are outlined in the conclusions.

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