

FBG SENSORS BASED SELF MONITORING SUPPORT STRUCTURES FOR TRACKERS.

Speaker: David Moya (IFCA)

Authors:

E. Currás, D. Moya, I. Vila, A. L. Virto, A. Ruiz (IFCA)

G. Carrión, M. Frövel. (INTA)

The position of the active components in current tracker systems is monitored online by dedicated hardware systems and offline by track-based alignment algorithms. Offline alignment algorithms suffer from its intrinsic blindness to the so call the *weak modes*. To solve this, we are considering the use of the Fiber Bragg Grating (FBG) sensors embedded on the CPRP support structures of trackers. This will allow us to measure the deformation of the supporting structure online and to know if the sensor position has changed at any moment. During the two last years we have characterize the FBG sensors response against irradiation and manufacture a few demonstration CFRP components instrumented with FBGs for displacement monitoring. A larger CFRP sheet demonstrator able to self-measure its bending and torsion deformation is being manufacture. Finally, we will report on a FBG-based monitoring system commissioned as part of the FP7 project *AIDA* thermo-mechanical infrastructure at DESY for the use of the HEP community since the end of this year.