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FBG monitored FTD

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The design of the ILD FTD sub detector is one of the main tasks of the IFCA group. One of the main issues of tracking detectors is to know at each moment the exact position of every component. Having a deformation and displacement monitor system integrated in the sub detectors would be of great utility to deal with this task. Fiber Bragg Grating (FBG) is the primary technique used in several areas for environmental and deformation monitor. Due to its light mass, their immunity to electromagnetic and magnetic fields and nuclear environments, multiplexing capability and the possibility to be embedded seems to be the best solution for our purpose. As a previous step, a technological demonstrator of FTD support-petals will be designed and manufactured with FBG sensors embedded in its carbon fiber sandwich structure. The aim will be to measure the deformation in predefined points of the demonstrator and calculate the deformed shape of the structure and the displacement between the locked points of the petal.

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