ACCELERATOR SEMINAR

"Fiber-Optic Based Cryogenic Temperature and High Magnetic Field Sensors"

Brian Geist,
MicroXact, Inc.

Fiber optic sensors are continuing to see development for use in radioactive environments due to the demand for radiation hardened sensors. Pure silica fiber is used for making sensors due to its low radiation cross-section. MicroXact and JLab have developed a fiber based cryogenic temperature sensor that is sensitive enough for thermal mapping of superconducting elements such as RF cavities as part of an advanced quench detection system. The sensor is fabricated from low radiation cross-section materials and has been proposed for use in radioactive environments. Radiation hardened magnetic field sensing for facilities such as accelerators and tokomaks are also currently being developed. MicroXact in collaboration with Oak Ridge National Lab, the Nuclear Reactor Lab at Ohio State University and the Facility for Rare Isotope Beams at Michigan State University have developed a radiation hardened all-optical magnetic field sensor that can be retrofit to Hall Effect type magnetic field sensing systems resulting in prolonged sensor service life in accelerators and other applications where long maintenance intervals are desired. This Faraday Effect sensor is built from pure silica fiber and a terbium gallium garnet crystal with all optical processing performed away from the radiation environment. With these and other fiber based sensors, MicroXact is developing a broad range of radiation hardened sensors for accelerator and reactor facilities.

Thursday, February 19, 2015
11:00 a.m.
CEBAF Center, F113

Coffee before seminar beginning at 10:45 a.m.

Jefferson Lab

For further info, please contact Joe Grames at x7097