Testing materials for their radiation hardness: the experience at CERN for the HL-LHC experiment upgrades

Dr. Nicola Pacifico (CERN)

Ivan Supek meeting room, 10:30, January 17, 2020

Abstract:

The Detector Technology group of the CERN Experimental Physics Department has initiated a campaign aimed at identifying radiation hard materials for their use in HL-LHC experiment upgrades. The irradiation is performed mainly with gamma photons from a 60Co source, at different facilities. The sample typology and their testing are conceived to allow the qualification with one or more commonly employed ASTM and/or ISO standards.

In this seminar I will give an overview of the characterization efforts so far, describing the irradiation facilities, with their specific advantages and drawbacks, the employed testing standards and the testing infrastructures. I will as well provide an overview of good practices required in the selection and testing of materials for harsh radiation environments.

Career:

Dr. Nicola Pacifico obtained his PhD in 2012 from the Bari University in Italy with a thesis titled "Radiation Damage Study on Innovative Silicon Sensors for the CMS tracker upgrade". While working at CERN on his PhD, Nicola Pacifico was awarded a prestigious Marie Curie Early Stage Researcher Fellowship. Then from 2012 till 2016 he was a researcher with University of Bergen (Norway) based at CERN. During this time he played a key role in the the AEgIS experiment at CERN. He was a responsible person for the development of the AEgIS silicon annihilation detector at CERN, a deputy Technical Coordinator of the AEgIS experiment, a project leader for the setup of secondary antiproton beamline in the AEgIS experimental zone. In 2016 he got a staff position at the Detector Technology group of the CERN Experimental Physics Department. One of the main duties of Dr. Pacifico is a coordination of the irradiation campaign for materials in HL-LHC experiment upgrades.