

Channeling 2018



Contribution ID: 171

Type: Oral presentation

Understanding the X-ray Emission Spectrum after Excitation with a Source of X-rays: from Theory to Experiment

Thursday, 27 September 2018 11:50 (15 minutes)

The modified Boltzmann-Chandrasekhar equation of transport for photons is the proper framework for describing the photon radiation field with a complete description of the polarization state. The characterization of the radiation field requires a detailed description of the interactions of photons with matter and comprises also the contribution of the secondary electrons to the photon field through mechanisms like inner impact ionization and bremsstrahlung without need of solving the coupled transport electrons-photons. The theoretical characterization of the x-ray spectrum of emission after excitation with a source of x-rays can be straightforwardly obtained from the albedo solution to this equation. However, this solution is still far from the experimental measurements modified by the detector and the measurement devices, comprised the pulse electronics. In this work we put together the theoretical framework, the interactions needed to get a detailed solution and the contributions to the detector and pulse handling modification in order to obtain a theoretical x-ray spectrum fitting well the real measurement.

Primary author: Prof. FERNANDEZ, Jorge (Alma Mater Studiorum University of Bologna)

Presenter: Prof. FERNANDEZ, Jorge (Alma Mater Studiorum University of Bologna)

Session Classification: S3.1 X-Rays/Neutrons/Atoms Channeling