Contribution ID: **55** Type: **not specified**

Two-dimensional energy and carrier diffusion in silicon upon X-ray irradiation or swift heavy ion impact

Thursday, 30 January 2020 17:30 (25 minutes)

We present the dynamics of carrier density and carrier/atomic energy in silicon after its excitation by an X-ray laser or swift heavy ion in two-dimensional geometry. The dynamics is modeled using the so-called nTTM model, i.e., a system of three coupled partial differential equations: one for carrier ambipolar diffusion and two coupled diffusion equations for carriers and phonons. To solve this system, we utilize a finite-difference integration algorithm based on Alternating Direction Implicit method with additional predictor-corrector algorithm, which takes care of the nonlinearities. After a detailed description of the method, we show its first results and discuss possible applications. Extension to three dimensions is also discussed.

Primary author: Dr LIPP, Vladimir (CFEL, DESY)

Co-author: Prof. ZIAJA, Beata (DESY)

Presenter: Dr LIPP, Vladimir (CFEL, DESY)

Session Classification: Modelling HED Physics