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Effective Temperature Dynamics of Radiation Induced Amorphization IDO REGEV, Center for non linear studies and Theoretical division, Los Alamos National Laboratory, XIANGDONG DING, TURAB LOOKMAN, Theoretical division, Los Alamos National Laboratory 61097340 — Materials exposed to radiation suffer structural changes over time. Typically, after exposure to radiation, a crystal will gradually lose its periodic structure and become amorphous. A theory of radiation amorphization should provide a description of the structural evolution. We study radiation amorphization in a simple molecular dynamics model and show that one can describe the amorphous steady-state using a structural effective temperature (different from the thermal bath temperature). We derive a theory that predicts the value of the steady-state effective-temperature as a function of the thermal bath temperature for a constant intensity of radiation. The theory agrees well with simulations results.

Ido Regev
Center for non linear studies and Theoretical division,
Los Alamos National Laboratory

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