

**Abstract for GR-TR Conference on Statistical Mechanics
and Dynamical Systems**

Topic: Non-equilibrium Statistical Physics

Preference: Poster

Hysteresis Analysis in Simple Charge Density Wave Systems

Mustafa Mert Terzi*, Muhittin Mungan

Boğaziçi University, Dpt. of Physics, Bebek 34342 Istanbul, Turkey

* Electronic Address: `mert.terzi@boun.edu.tr`

We are interested in hysteresis behaviour in Charge Density Waves (CDW) systems which are elastically-coupled particle systems in periodic potentials with random phase-offset. Such systems have static (pinned) solutions when subjected to an external force which is below a threshold force. Actually, CDWs have two unique and distinct threshold configurations, corresponding to reaching the threshold via positive or negative force increments[1]. We are interested in the hysteresis behaviour of CDWs when cycled between these two threshold forces, whether the system settles into a steady-state hysteresis loop after many such cycles, and if so how this behavior depends on the particular forcing cycle.

[1] A.A. Middleton and D.S. Fisher, *Phys. Rev. B* **47**, 3530 (1993).