

Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Displacement Profile of Charge Density Waves and Domain Walls at Critical Depinning THOMAS NATTERMANN, ANDREAS GLATZ, University of Cologne — The influence of a strong surface potential on the critical depinning of an elastic system driven in a random medium is considered. If the surface potential prevents depinning completely the elastic system shows a parabolic displacement profile. Its curvature C exhibits at zero temperature a pronounced rhombic hysteresis curve of width $2f_c$ with the bulk depinning threshold f_c . The hysteresis disappears at non-zero temperatures if the driving force is changed adiabatically. If the surface depins by the applied force or thermal creep, C is reduced with increasing velocity. The results apply, e.g., to driven magnetic domain walls, flux-line lattices and charge-density waves.

Thomas Nattermann
University of Cologne

Date submitted: 01 Dec 2004

Electronic form version 1.4