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Slow dynamics of an elastic string in a random potential ALEJANDRO KOLTON, Université de Genève, DPMC, 24 Quai Ernest Ansermet, CH-1211 Genève 4, Switzerland, ALBERTO ROSSO, LPTMS, Université Paris-Sud F-91405 ORSAY Cedex, France, THIERRY GIAMARCHI, Université de Genève, DPMC, 24 Quai Ernest Ansermet, CH-1211 Genève 4, Switzerland — We study the slow dynamics of an elastic string in a two dimensional pinning landscape by means of Langevin dynamics simulations. We find that the Velocity-Force characteristics are well described by the creep formula predicted from phenomenological scaling arguments. However, at strong disorder, the creep exponent μ and the roughness ζ of the string display a clear deviation from the values $\mu \approx 1/4$ and $\zeta \approx 2/3$ expected assuming a quasi-equilibrium-nucleation picture of the creep motion. We also analyzed the non-stationary relaxation of the string towards the steady state. We identify a slowly growing length $L(T, F, t)$ separating equilibrated and non-equilibrated length scales during the relaxation. For equilibrated lengths, $l < L$, we find a roughness $\zeta \approx 2/3$ at $F = 0$ while for small $F > 0$ an “excess” of roughness $\zeta > 2/3$ is always observed.

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