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Smectic liquid crystal cells with a "dirty" substrate
QUAN ZHANG, LEO RADZIHOVSKY, Department of Physics, University of Colorado, Boulder, CO 80309 — I will describe our recent studies of smectic liquid crystal cells with a "dirty" substrate. Acting as quenched disorder, such substrate heterogeneity destabilizes long-range smectic order on the surface and in the bulk for arbitrarily weak randomness. We analyze the statistics of the corresponding distortions, their decay into the bulk, topological defects and the role of nonlinear smectic elasticity. We will discuss our predictions in the context of recent experiments on ferroelectric smectic-C liquid crystals.

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