CRITICAL WETTING MODELS IN 1+1 DIMENSIONS

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Wetting models are a class of random interface models having an interplay between two forces – local (presence of pinning) and global (presence of a hard wall and the geometry of the space). In 1+1 dimensions, the standard delta-pinning model is completely solved and a sharp phase transition holds, where the asymptotic behavior of the system is drastically different in the various phases. In particular, at criticality, the rescaled static path converges in law to the reflected Brownian motion. However, from a dynamical point of view, the corresponding process is ill-defined since the pinning potential is singular at zero.

Considering the static model on a strip of a fixed size and with a constant pinning function, the existence of phase transition and off-critical scaling limits are known, while the critical case is open.

In the talk we shall discuss a recent joint work with Jean-Dominique Deuschel which tackles the singularity while keeping the same critical behavior. In particular, we shall present a static path scaling limit for the strip model so that the strip size is shrinking to zero. Here any pinning function is allowed (even smooth), as long as it approximates the critical value of the standard model.

References