

Continuous and discontinuous interface dynamics in disordered media: theoretical and experimental studies

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The pinning-depinning transition of interface motion in disordered media can be continuous or discontinuous when the motion is described by the quenched Kardar-Parisi-Zhang equation with positive or negative nonlinear term, respectively. Recently this theoretical result [1] has been realized experimentally [2] in the domain wall motion in two dimensional Pt/Co/Pt films. When the domain wall is driven by electric current, the PD transition is discontinuous, while driven by a magnetic field, it is continuous. Different mechanisms of those PD transitions will be explained in the talk.

References

- [1] H. Jeong, B. Kahng, and D. Kim, Anisotropic surface growth model in disordered media, *Phys. Rev. Lett.* **56**, 5094 (1996).
- [2] K.-W. Moon et al., Distinct universality classes of domain wall roughness in two dimensional Pt/Co/Pt films, *Phys. Rev. Lett.* **110**, 107203 (2013).