

MARTINA MAGLIOCCA
Centre Borelli, ENS Paris-Saclay

SOME FOURTH ORDER PROBLEMS ARISING IN PHYSICS

We will see some fourth order problems arising in Physics which model different processes, such as the growth of crystal surfaces and wetting-dewetting processes. Mathematically speaking, we will focus on global existence and regularity results for problems as

$$\begin{cases} u_t = F(t, x, u, \nabla u, \dots, \Delta^2 u) & \text{in } [0, T] \times \mathbb{T}^N, \\ u(0, x) = u_0(x) & \text{in } \mathbb{T}^N, \end{cases}$$

where $\mathbb{T}^N = [-\pi, \pi]^N$ is the N -dimensional torus and the initial data u_0 belong to Wiener spaces. The particular choices of F will describe the model in object.

These results are contained in a joint work with R. Granero Belinchón [1], and in [2].

-
- [1] R. Granero-Belinchón, R., & Magliocca, M. (2019). Global Existence and Decay to equilibrium for some crystal surface models. *Discrete & Continuous Dynamical Systems-A*, 39(4), 2101-2131.
- [2] Magliocca, M. (2022). On a fourth order equation describing single-component film models. arXiv preprint arXiv:2203.13707.