

# Parabolic equations with rough initial data

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It is an important insight from harmonic analysis that maximal functions, square functions and Carleson measures are useful objects to understand and describe properties of functions, operators and differential equations. I report on applications of these concepts to local and global solution to nonlinear parabolic equations. Instances are:

1. Wellposedness for the Navier-Stokes equations for initial data whose components are the divergence of BMO vector fields.
2. The harmonic map heat flow with initial data in BMO.
3. Lipschitz perturbations to linear fronts for porous media and thin films.

## *References*

- [1] *T. Lamm, H. Koch*: Geometric flows with rough initial data. *Asian J. Math.* *16* (2012), 209–235.
- [2] *H. Koch, T. Tataru*: Well-posedness for the Navier-Stokes equations. *Adv. Math.* *157* (2001), 22–35.