

# From generalization of bistable equation to Fibonacci sequence

Radim Hošek

Department of Mathematics, University of West Bohemia, Czech Republic  
radhost@kma.zcu.cz

Bistable equation  $u_t = \varepsilon^2 u_{xx} - F'(u)$  is used for modelling the dynamics of phase transition at some critical temperature. Authors of [1] offer an alternative explanation to the phenomenon of *slow dynamics*, using potentials  $F$  that are non-smooth in its minimizers. Manifolds of critical points (that are of the local minimum type) occur in such case. We generalize this result for potentials of other types, having bigger number of local minima.

Determining the number of manifolds for some particular types of potentials reveals an interesting connection to different fields of mathematics including the basic graph theory or the Fibonacci sequence...

## References

- [1] *P. Drábek, S. B. Robinson*: Continua of local minimizers in a non-smooth model of phase transitions. *Z. Angew. Math. Phys.* *62* (2011), 609–622.
- [2] *P. Drábek, R. F. Manásevich, P. Takáč*: Manifolds of critical points in a quasilinear model for phase transitions. *Nonlinear Elliptic Partial Differential Equations*, 95–134, Contemporary Mathematics 540, AMS, Providence, RI, 2011.