

Existence and multiplicity for implicit discretization of Nagumo RDE on unbounded domain via variational methods

Jonáš Volek

Pilsen, Czech Republic

We analyze existence and uniqueness of ℓ^2 -solutions of the implicit discrete Nagumo reaction-diffusion equation. We study the infinite-dimensional problem variationally and describe corresponding potentials which have either the convex or mountain pass geometry. Consequently, we show that the implicit Nagumo equation has a solution for all reaction parameters $\lambda \in \mathbb{R}$, at least for small time discretization steps h . Moreover, the solution is unique in the bistable case, $\lambda > 0$. This is a joint work with Petr Stehlík.

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References

- [1] P. Stehlík, J. Volek, *Implicit discrete Nagumo equation and variational methods*, J. Math. Anal. Appl. 438 (2016), 643–656.