
TURING INSTABILITY AND REACTION-DIFFUSION-ODE SYSTEMS

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I shall review results, obtained jointly with Anna Marciniak-Czochra, Kanako Suzuki, and Szymon Cygan, on a certain class of reaction-diffusion systems from Mathematical Biology, where ordinary differential equations are coupled with one reaction-diffusion equation. Such systems may have regular (*i.e.* sufficiently smooth) stationary solutions, however, all of them are unstable. We showed that solutions to such problems may behave in a singular way for large values of time and converge towards discontinuous stationary solutions

These results are contained in our works:

- A. Marciniak-Czochra, G. Karch, and K. Suzuki, *Instability of Turing patterns in reaction-diffusion-ODE systems*, J. Math. Biol. 74 (2017), 583–618.
- S. Cygan, A. Marciniak-Czochra, G. Karch, and K. Suzuki, *Instability of all regular stationary solutions to reaction-diffusion-ODE systems*, preprint (2021), arXiv:2105.05023.
- S. Cygan, A. Marciniak-Czochra, G. Karch, and K. Suzuki, *Stable discontinuous stationary solutions to reaction-diffusion-ODE systems*, preprint (2021).

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