The role of equipartition of energy in stability and concentration phenomenon of a reaction-diffusion problem.

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The focus is on a reaction-diffusion problem on a surface of revolution without boundary. First, under equipartition of energy we establish the existence of a family of stable stationary solutions with an internal transition layer across a local minimum geodesic of the surface. This is accomplished via a Gamma-convergence approach once the problem is viewed as a singularly perturbed one. Then, we investigate how the breaking of the equipartition of energy impacts stability and the underlying concentration phenomenon, as the diffusion coefficient goes to zero.

In Special Session 19 on Nonlinear Evolution Equations: Trends in Control Theory and Related Topics at the Mathematical Congress of the Americas 2025.

MCA 2025 internal code: SS19-T33