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Global solutions and curved fronts for some reaction-diffusion equations

ABSTRACT:

This talk will be devoted to the description of the time-global solutions of some reaction-diffusion equations in the whole space. Uniform solutions and planar travelling waves are well-known solutions. In the case of Kolmogorov-Petrovsky-Piskunov type nonlinearities, a process of interaction of planar fronts moving in different directions gives rise to an infinite-dimensional manifold of solutions. If the spatial dimension is bigger than 2, this approach leads to the construction of curved fronts. These fronts can be viewed as the nonlinear superposition of planar fronts satisfying a given geometrical condition. The cases of combustion and bistable nonlinearities will also be discussed.