ID de Contribution: **3**   Type: **Non spécifié**

Stable solutions to semilinear elliptic equations are smooth up to dimension 9

jeudi 4 avril 2024 16:00 (1 heure)

The regularity of stable solutions to semilinear elliptic PDEs has been studied since the 1970's. It was initiated by a work of Crandall and Rabinowitz, motivated by the Gelfand problem in combustion theory. The theory experienced a revival in the mid-nineties after new progress made by Brezis and collaborators. I will present these developments and my work in collaboration with Figalli, Ros-Oton, and Serra, which finally establishes the regularity of stable solutions up to the optimal dimension 9. I will also describe a more recent paper of mine which provides full quantitative proofs of the regularity results. I will finally comment on similar progress and open problems for related equations.

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