

CMM PDE Seminar

Speaker: Boyan Sirakov (PUC-Rio, Brasil).

Title: Uniform a priori estimates for positive solutions of the Lane-Emden equation and system in the plane.

Abstract A few years ago we proved that positive solutions of the superlinear Lane-Emden equation in a two-dimensional smooth bounded domain are bounded independently of the exponent in the equation. Apart from being interesting in itself, this information plays a pivotal role in the asymptotic study of solutions for large exponents, as well as contributes to the old and hard conjecture of uniqueness of positive solutions in a convex domain. We recently took up a similar study for the Lane-Emden system and discovered that, contrary to initial intuition, the boundedness fails in general. This is compelling evidence of the richer nature of the system case. We prove the partial result that uniform boundedness holds provided the exponents in the system are comparable (while many open questions subsist). As a consequence, the energy of the solutions is uniformly bounded, and this has similar consequences as for the scalar equation. This is a joint work with N. Kamburov from PUC-Chile.

March 06, 2023 at 12 Santiago time

To be held in person at **Sala de seminarios DIM, 5th floor**, Beauchef 851, and online via zoom:

<https://reuna.zoom.us/j/85920614738?pwd=OFh5TFQ2YlBldEd5cERNVzZnZGVUdz09>

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