Barcelona Analysis Seminar **2023–2024**

URL. https://mat.uab.cat/web/seminarianalisi/

Date. October 05, 2023

Time. 15:00 CET

Room. UB iA (Universitat de Barcelona)

Online streaming. Click here to join.

Stability in Gagliardo-Nirenberg-Sobolev inequalities: nonlinear flows, regularity and the entropy method

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We discuss stability results in Gagliardo-Nirenberg-Sobolev inequalities, a joint project with J. Dolbeault, B. Nazaret and N. Simonov.

We shall begin with an introduction to the issues of establishing (sharp) inequalities, and then focus on the problem of stability, raised by Brezis and Lieb in the 90s.

We have developped a new quantitative and costructive "flow method", based on entropy methods and sharp regularity estimates for solutions to the fast diffusion equation (FDE). This allows to study refined versions of the Gagliardo-Nirenberg-Sobolev inequalities that are nothing but explicit stability estimates. Using the quantitative regularity estimates, we go beyond the variational results and provide fully constructive estimates, to the price of a small restriction of the functional space which is inherent to the method.

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