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# Contributed Talks 4: Giorgio Cialdea & Lars Eric Hientzsch

*Wednesday, 30 April 2025 11:30 (1 hour)*

Giorgio Cialdea. We show finite-time vorticity blowup for smooth solutions of the 2D compressible Euler equations with smooth, localized, and non-vacuous initial data. The vorticity blowup occurs at the time of the first singularity, and is accompanied by an axisymmetric implosion in which the swirl velocity enjoys full stability, as opposed to finite co-dimension stability. This is a joint work with Jiajie Chen, Steve Shkoller and Vlad Vicol.

Lars Eric Hientzsch. On the ill-posedness of the 2D Boussinesq equations in the class of bounded initial data The Boussinesq equations describe the evolution of a stratified fluid under the influence of gravity. We investigate the system in vorticity form and with a stable continuous background stratification increasing with depth (spectrally stable density profile). We prove that the system is strongly ill-posed in the class of data with bounded initial vorticity and density gradient. The mechanism that allows us to exhibit the norm-inflation in infinitesimal time is purely nonlinear - in contrast to previous results on mild ill-posedness of the system. Time permitting, we discuss applications to the 3D axisymmetric Euler equations with small bounded initial vorticity are discussed. Based on joint work with R. Bianchini (IAC Rome) and F. Iandoli (Università della Calabria)