

Seminar of the Work Group
Nonlinear Partial Differential Equations
SS 22

Speaker: Dr. Francesco Fanelli
April 19th, 2022, 14:00 - 15:00
Seminar room: 3.061

WELL AND ILL-POSEDNESS ISSUES FOR SOME MODELS OF TURBULENCE

Francesco Fanelli

In this talk, we review some recent results about the so-called *Kolmogorov two-equation model* of turbulence. This is a coupling of three degenerate parabolic equations for the mean velocity field u of the fluid, the mean frequency ω of the turbulent fluctuations and the average turbulent kinetic energy k .

We focus in particular on the case when the initial turbulent kinetic energy k_0 is allowed to vanish, in space dimension $d = 1$. We show that, in this case, smooth local solutions exist, but in general they blow up in finite time.

This is based on joint works with *R. Granero-Belinchón* (Universidad de Cantabria – Santander, Spain).