**Title:** Singularities in the 3D incompressible Navier–Stokes equations  
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**Abstract:** The 3D incompressible Navier–Stokes Equations are the central mathematical model of fluid mechanics and have been intensely studied since the celebrated work of Leray (1934). Despite a significant effort, the fundamental question of the global existence of strong solutions remains unsolved. Although we are not able to determine whether singularities exist, we are able to estimate the ‘size’ of the possible set $S$ of the singular points, i.e. points $(x,t)$ at which the velocity field $u$ blows up. This is possible thanks to the partial regularity theory by Caffarelli, Kohn, Nirenberg (1982). This theory is concerned with the study of the localised form of the energy inequality and it enables us to estimate both the box-counting dimension and the Hausdorff dimension of the singular set. In the talk we will introduce these notions of dimension and we will discuss the respective estimates for the singular set. We will also observe the new estimates of the dimension, some of which are very recent!

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