On the self-similar blow-up scenario for the Euler equations

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Resumo

In this talk we will survey some results regarding the possibility of a self-similar blow-up for the Euler equations. We will also prove that under a mild L^p-growth assumption on the self-similar profile we obtain that the solution carries a positive amount of energy up to the time of blow-up. As a consequence, we will recover and extend several previously known exclusion criteria. Also, we will present some preliminary studies on the fractal dimension of the energy measure, which roughly speaking is the limit of the measures on the space induced by the velocity squared as time approaches the time of blow-up. We will explore the relation between the fractal dimension of the energy measure and the growth of the velocity as time approaches the time of singularity formation. This is joint work with Roman Shvydkoy.