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Laurent Lafleche (laurent.lafleche@math.utexas.edu), **Alexis F Vasseur*** (vasseur@math.utexas.edu) and **Misha Vishik** (misha.vishik@gmail.com). *Instability of finite time blow-ups for incompressible Euler.*

In this talk, we will discuss the interaction between the stability, and the propagation of regularity, for solutions to the incompressible 3D Euler equation. It is still unknown whether a solution with smooth initial data can develop a singularity in finite time. We will explain why the prediction of such a blow-up, via direct numerical experiments, is so difficult. We will describe how, in such a scenario, the solution becomes unstable as time approaches the blow-up time. The method uses the relation between the vorticity of the solution, and the bi-characteristic amplitude solutions, which describe the evolution of the linearized Euler equation at high frequency. In the axisymmetric case, we can also study the instability of blow-up profiles. This work was partially supported by the NSFDMS-1907981. (Received February 08, 2021)