Preuve de la Conjecture d’Onsager dans un Domaine Borné

In 1949 Onsager [5] gave a formal proof of the following fact: Any weak solution of the incompressible Euler equations preserves the energy as long as it belongs to the Holder space $C^{0,\alpha}$ with $\alpha > 1/3$. This topic, in relation with issue of anomalous energy dissipation and with the related Kolmogorov law has attracted the attention of mathematicians even more recently after the construction by De Lellis, Székelyhidi and their coworkers [1]et [4] of wild weak solutions (ie that do not conserve the energy). The first proofs of this Onsager conjecture (in the whole space of for space periodic solutions) used harmonic analysis and in particular estimates in Besov spaces. Eyink in 1994 [3] for a preliminary result and Constantin, E and Titi [2] soon after and then may refinements. I will present a contribution, (in collaboration with Edriss Titi) devoted to the proof of this conjecture in a domain with boundary. The presence of boundary leads to a direct proof, much simpler and much more explicit. Moreover this point of view brings some improvement on the understanding of the appearance of anomalous dissipation in the zero viscosity limit of solutions of Navier–Stokes equations.

References