

Colloquium Talk

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Existence proof of solutions of fluid mechanical equations via interval analysis

Wednesday, February 28, 2018

at 14:00 h

ESI, Boltzmann Lecture Hall

Abstract: Two-dimensional flows often display a large eddy at very large Reynolds numbers. It is geometrically simple and often very symmetric. I call it a unimodal solution. In this joint work with Tomoyuki Miyaji (Meiji University, Tokyo, Japan) I will give some ideas about a rigorous proof of existence of a unimodal solution. In the proof we resort to the interval analysis and multiple-precision arithmetic. They enable us to have a guaranteed upper bound on computer's rounding errors, and we can prove rigorously the existence of a solution by a numerical computation.

A. Constantin

February 22, 2018