



POSTDOCTORAL RESEARCH POSITION



## Non-linear analysis of numerical schemes for turbulence and acoustics simulation

At Laboratoire de Modélisation en Mécanique

<http://www.lmm.jussieu.fr>

Université Pierre et Marie Curie – Paris 6, Paris, France

Duration : 1 year (possible extension to 2 years)

### SCIENTIFIC CONTEXT

This research project is part of the collaborative work between the Laboratoire de Modélisation en Mécanique and the Indian Institute of Technology (Kanpur) dealing with advanced methods in Computational Fluid Dynamics (DNS, LES) and Computational Aeroacoustics.

The main purpose of this collaboration, granted by IFCPAR, is to provide new analyses of the non-linear dynamics of the numerical error within the DNS/LES framework. It is now commonly agreed that the control of the numerical error and its non-linear coupling with the physical models is one of the main open issues in the CFD field. It also appears that most tools for numerical error analysis are restricted to the linear case, while strong non-linear phenomena are at play in turbulence and non-linear aeroacoustics simulations. Therefore, it is proposed here to work on the development of new theoretical tools (Lie group analysis, structural stability based on existence of solitary waves, resonant wave analysis, ...) and to improve existing high-order schemes.

This postdoctoral position is funded by IFCPAR. Its duration can be extended to two years. The monthly stipend is about 1800 euros (net of tax). The work is expected to begin in 2006 (as soon as an applicant will have been selected). The candidate will be paid economy class airfare upon joining. The candidate may have to visit IIT Kanpur, for which TA and DA will be paid.

### QUALIFICATION

The candidate must have a good background in Computational Fluid Dynamics (more specifically in DNS/LES) and numerical methods. **French speaking is not required. The candidate has to be an Indian national.**

### APPLICATION PROCEDURE

Applicants should send (by mail or email) their *Curriculum Vitae*, including a detailed list of publications, a statement of interests and the addresses of two referees to

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