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**SEMINAR OF NUMERICAL ANALYSIS**

➤ **WEDNESDAY 22 FEBRUARY 2017 - ROOM MED 0 1418 - 16h15**

**Hadrien Montanelli** (University of Oxford) will present a seminar entitled:

« *Fourth-order time-stepping for stiff PDEs on the sphere* »

Abstract:

*We present in this talk algorithms for solving stiff PDEs on the unit sphere with spectral accuracy in space and fourth-order accuracy in time. These are based on a variant of the double Fourier sphere method in coefficient space and implicit-explicit time-stepping schemes. The use of multiplication matrices operating on the Fourier coefficients avoids the artificial pole singularity while implicit-explicit schemes circumvent severe restrictions on the time-steps due to the clustering of points near the poles. A comparison is made against exponential integrators and it is found that implicit-explicit schemes perform best. Implementations in MATLAB and Chebfun make it possible to compute the solution of many PDEs to high accuracy in a very convenient fashion.*

Lausanne, 25 January 2017/JH/dv