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Meteorology Seminar

Dr Colm Connaughton $\mu\beta\gamma$ (Center for Nonlinear Studies, Los
Alamos National Laboratory)

will speak on

The Spectra and Vortices of Two-dimensional Turbulence

Mon 24th July 2006 at 2:15PM

Location: Mathematical Sciences Seminar Room

I will describe the physics of so-called "blocked inverse cascades" in two dimensional turbulence. A blocked cascade occurs when the large scale dissipation is too weak to dissipate all of the energy pumped into the inverse cascade before it reaches the size of the system. This blocking facilitates the generation of very intense coherent vortices on the scale of the system which are qualitatively different to the vortices observed in the regular inverse cascade. They are stabilised by finite size effects and as a result can become much more intense than regular vortices. They can have a strong impact on the energy spectrum and other "standard" turbulence diagnostics. In particular the presence of these large scale vortices tends to replace the usual $k^{-5/3}$ energy spectrum with a k^{-3} spectrum at the largest scales. I will make some speculation about where this mechanism

This talk is part of the **Meteorology** series. For more, see
<https://maths.ucd.ie/seminars>