Abstract Submitted
for the DFD10 Meeting of
The American Physical Society

**A low dimensional model for Rayleigh-Benard convection in rectangular domains**[1] JORGE BAILON-CUBA, JOERG SCHUMACHER, TU Ilmenau — A low dimensional model (**LDM**) for Rayleigh-Bénard (**R-B**) convection in rectangular boxes, based on the Galerkin projection of the Boussinesq equations onto a finite set of empirical eigenfunctions, is presented. The empirical eigenfunctions are obtained from Proper Orthogonal Decomposition (**POD**) of the field using the Snapshot Method. The most energetic **POD** modes give us a hint on the dynamic dominance of coherent flow patterns, and how well the original inhomogeneous flow can be modeled with a reduced number of modes. A quadratic non-homogeneous **ODE** system is obtained for the evolution of the modal amplitudes. A solution which considers the additional dissipation due to the neglected less energetic modes is considered in terms of a parameter $e \geq 0$, fixed at a value where the ensemble average of the total viscous and thermal dissipation in the model is the same as in the full simulation (**DNS**). We discuss first results of the evolution of the **LDM** and compare it with the **DNS** data of the **R-B** problem.

[1]This work is supported by the Deutsche Forschungsgemeinschaft (DFG).

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Date submitted: 02 Aug 2010 Electronic form version 1.4