

Turbulent Rayleigh-Bernard Convection

April 21 at 11:00 AM ERC 490

abstract

In Rayleigh-Benard convection, a confined fluid is heated from below and cooled from above. Results from very well-resolved direct numerical simulations of Rayleigh-Benard convection in the turbulent regime will be presented. This includes a discussion of the small-scale universality of turbulence in the bulk of the container. A connection will be made between rare, extremely large values of the kinetic energy dissipation rate and large-scale flow structures. The behavior of the boundary layers will also be discussed. Finally, results will be shown for very low Prandtl numbers representing liquid metals.

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biosketch

Dr. Janet Scheel obtained her PhD from Caltech, working with her advisor Michael Cross on rotating Rayleigh-Benard convection, a system which exhibits spatio-temporal chaos. Since then she has moved on to fully turbulent Rayleigh-Benard convection systems, and collaborates with Joerg Schumacher from TU Ilmenau. She has taught at Cal Lutheran, Caltech, Cornell, Wells College, and SUNY Cortland. She is an Associate Professor at Occidental College.