



UNIVERSITÄT
LEIPZIG

Fakultät für Physik und
Geowissenschaften

Prof. Dr. J. Deiglmayr
Prof. Dr. J. Vollmer

Physics Colloquium

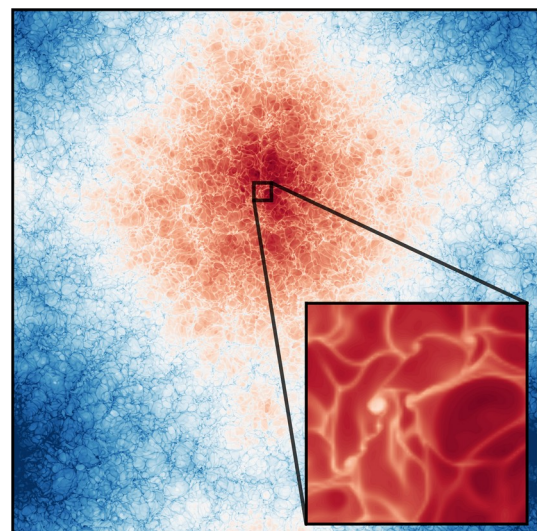
Tuesday, 4 May 2021 at 17:00

Prof. Dr. Jörg Schumacher

Fluid Mechanics Group, TU Ilmenau

Superstructures of convection in the Sun. Studying large-scale order with deep neural networks

Turbulent flows are highly chaotic and characterized by a cascade of irregular vortices, however our daily experience shows that such flows are often organized into prominent large-scale and long-living patterns. One example is turbulent convection in the outer shell of the Sun which manifests at the surface in the form of granules which cover the 30 times larger and longer-living supergranules. In the colloquium, I will demonstrate in numerical simulations such a supergranule aggregation in a much simpler flow than solar surface convection – the turbulent Rayleigh-Bénard convection case driven constant heat flux. We show that this requires very long-term simulations and reveal the basic instability mechanisms that drive the fully developed turbulent convection layer to a supergranule. I will furthermore present our work to capture turbulent convection processes in reduced models that apply recurrent neural networks.



Online Colloquium broadcasted by **BigBlueButton** at

<https://lecture.uni-leipzig.de/b/vol-qad-yhg-c2k>

