

Project Title

Annual Report 2020
DFG Priority Programme SPP 1881 "Turbulent Superstructures"

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1 Scientific Objective

Summarize the scientific objective in one paragraph here. Note that your report **should not exceed 3 pages including figures**. The goal is that all of us get a compact overview of what is currently done in the other project nodes.

2 Project start

Our project within the Priority Programme started in February 2020.

3 Current Scientific Results

The current and intermediate results should be placed in this section. If you need to refer to literature that did not emerge from this project, please use a footnote¹. Figures can be included as shown in Figure 1. Please list finally below those topics A–F only that contain a contribution of your project. It can be a bit more specific, e.g. A: Detection and analysis of VLSM in a turbulent channel flow.

We thus contributed to the following topical groups of the Priority Programme:

- A: Detection and characterization of turbulent superstructures
- B: Origin of turbulent superstructures
- C: Mechanics of turbulent superstructures and role of boundary conditions
- D: Role of turbulent superstructures in transport of mass, momentum and/or heat
- E: Investigation of interfaces and transport barriers
- F: Reduced modeling and control of turbulent superstructures

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¹Meier, R. M. & Mayer, M. R., A perspective on Jupiter. *Phys. Rev. Y* **2**, 012555 (2019).



Figure 1: The Great Red Spot of Jupiter taken by Juno satellite. Source: NASA.

4 Networking within the Programme

We collaborate with

- Christiane Schneide and Kathrin Padberg-Gehle (Leuphana Universität Lüneburg) on fresh perspectives on Jupiter and the impact on the solar dynamo. This includes the following ...
- Sebastian Moller and Christian Cierpka (Technische Universität Ilmenau) on the visualization of red spots in a fluid layer and its comparison with the numerical results. Therefore we generated ...

We plan to collaborate with

- XY and YZ (Universität Erfurt) on ...

5 Outlook

As the next step in our project, we plan to investigate the characteristic shear bands around the Great Red Spot. This will be done by

6 Publications and Conference Proceedings

- Vieweg, P. P. & Schumacher, J., Our perspective on Jupiter. *Phys. Rev. Y* **3**, 012555 (2020).
- Schneide, C., Vieweg, P. P., Padberg-Gehle, K. & Schumacher, J., Our joint fresh perspective on Jupiter. *Phys. Rev. Z*, submitted (2020).
- Schneide, C., Vieweg, P. P., Padberg-Gehle, K. & Schumacher, J., A presentation of our fresh perspective. Workshop on Astrophysical Turbulence, Zoom City, pp. 1-11 (2020).