

# Map-based stochastic modeling of turbulent mixing in transient shear flows

Marten Klein\*

19 August 2021

Map-based stochastic modeling distinguishes molecular-diffusive from turbulent-advective transport processes in fluid flows. In the one-dimensional turbulence (ODT) model, a stochastic point process with energetically constrained rejection sampling of discrete eddy events is used to economically model the effects of turbulence on all relevant scales of the flow. Here I will discuss the model formulation and its application to passive scalar mixing in a confined jet [1].

## References

- [1] M. Klein, C. Zenker, H. Schmidt (2019) *Chem. Eng. Sci.* **204**:186–202.

---

\*Numerical Fluid and Gas Dynamics, Brandenburg University of Technology (BTU) Cottbus-Senftenberg, Germany