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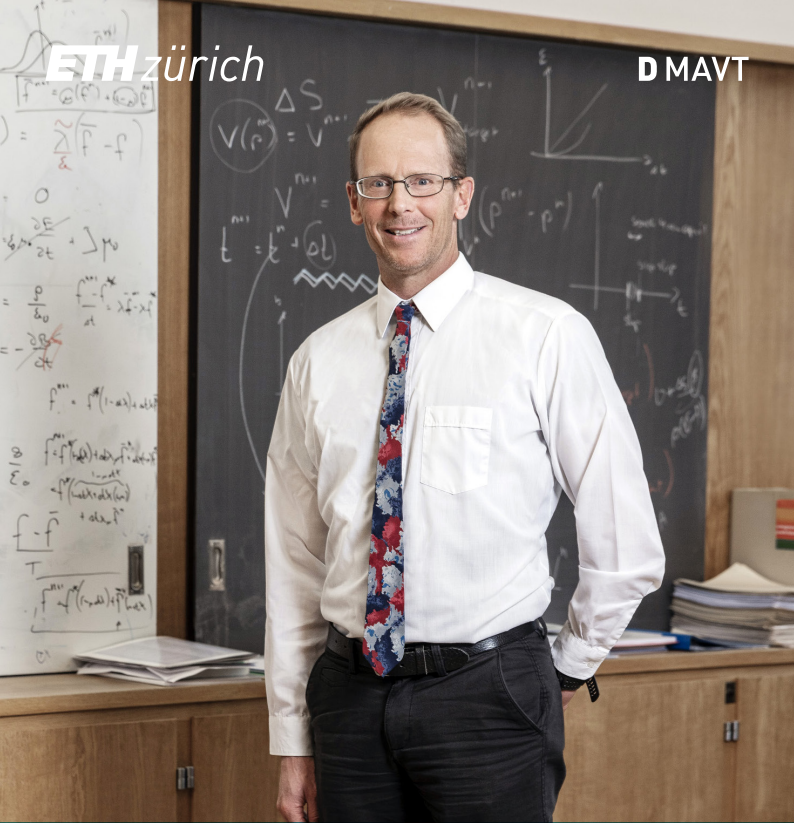

Professor Patrick Jenny

«The simpler a model, the more beautiful it is!»

Computational Fluid Dynamics and Multi-Scale Modeling

Institute of Fluid Dynamics

Our group's research areas include theory and modeling of turbulent flows, flow, transport and mechanics in fractured porous media, and rarefied gas dynamics. Furthermore, we develop numerical schemes and multi-scale methods for two-phase and subsurface flow problems. Targeted applications include oxy-fuel combustion, CO_2 sequestration, enhanced geothermal systems, aerodynamics, cerebral blood flow, and heart assist devices. We focus on:

- Turbulence and turbulent combustion
- Flow, transport and mechanics in fractured porous media
- Rarefied gas dynamics

Tools and methods

- Temporal large eddy simulation (LES)
- Hybrid LES/RANS
- Probability density function (PDF) methods
- Finite volume methods (FVM)
- Uncertainty quantification
- Data assimilation
- Direct simulation Monte Carlo and Fokker-Planck methods
- Theory

Further details online:
www.ifd.ethz.ch/research/group-jenny