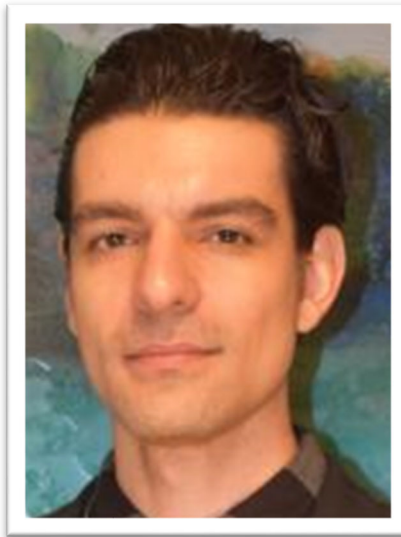# Physical Math Seminar

A Finite State Space Representation of Turbulent Statistics and its Application to Climate

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ABSTRACT:

In this talk, we discuss a representation of climate as the evolution of a high-dimensional probability density given by the weather. We first develop a robust flux-differencing discontinuous Galerkin method to generate high-fidelity data describing an idealized statistically-steady climate model. Following this, we show how to employ a data-driven method to discretize this system's underlying continuity equation to obtain a compact representation of relevant statistics (climatology). The method is illustrated using the compressible Euler equations, but the Lorenz equations are used to provide geometric guidance.

TUESDAY, OCTOBER 24, 2023
2:30 PM – 3:30 PM
Building 2, Room 449

https://math.mit.edu/pms/

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