

**PiAI Seminar Series: Physics informed AI in Plasma Science**  
**9:30-10:30, 30 November 2020 (CET)**  
**17:30-18:30, 30 November 2020 (JST)**  
**Web Seminar**

Statistical maximum-entropy models for turbulence generation

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Models of stationary (homogenous) processes may be defined as maximum-entropy distributions conditioned by a family of statistical moments that are invariant to translations. A major challenge is to prescribe the moments such that the resulting model is able to generate similar geometric patterns such as tourbillons in Turbulence. We introduce phase harmonic moments to capture these crucial non-Gaussian properties of the stationary processes. The phase harmonics are inspired from the rectifier non-linearity in deep neural networks. An extension of the model for inertial particle distribution driven by Turbulent winds will also be presented. This is a joint-work with A. Brochard, B. Błaszczyszyn and S. Mallat.