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Sparse sampling and asymptotical field averages in turbulence
FLORINE PARAZ, MAHESH M. BANDI, OIST Graduate University — Turbulent flows represent a strongly correlated classical field characterised by strong velocity fluctuations in space and in time, which are not independent of one another. Focusing only on temporal velocity measurements, a discrete Eulerian point and a continuous Eulerian field measurement represent the two limits, and each yields its own spectrum. We ask, how does the temporal, Eulerian point spectrum converge towards the temporal Eulerian field spectrum as one increases the number of discrete sampling points across the field. We discuss preliminary experiments in both two and three dimensional turbulence. We exploit the breakdown of Galilean invariance for higher order velocity spectra to understand convergence from discrete point to continuous field limits *via* spatial sparse sampling.

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