
WST and friends : novel statistical descriptions of complex interstellar structures

François Levrier*¹

¹Ecole normale supérieure – École normale supérieure - Paris – France

Abstract

The filamentary, non-Gaussian patterns observed in the ISM result from the non-linear interplay between turbulence, gravity, and magnetic fields. Our understanding of ISM physics relies on heavy numerical simulations and their comparison to ever-improving observational results. This requires a quantitative way to compare observations and numerical simulations of the ISM, and therefore warrants an adequate statistical description of non-Gaussian structures.

The WST, RWST, and WPH are such a consistent and general ensemble of statistical descriptors able to characterize non-linear phenomena by encoding the couplings between oriented scales. I will present these tools and their applications to various types of fields, in particular numerical simulations of interstellar turbulence and observations of thermal dust continuum in total intensity and polarization.

Keywords: Statistical tools, interstellar turbulence

*Speaker