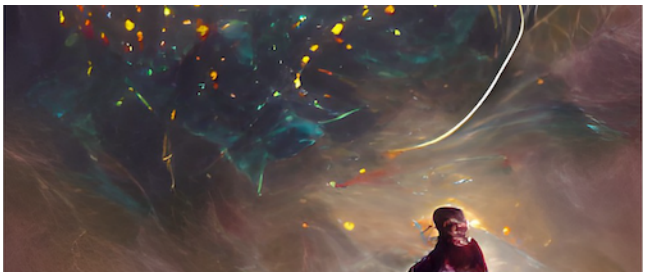

Contribution ID: **62** Type: **not specified**

Cosmic Filament Detection Through the Spherically Adaptive Density Ridges

Friday, 11 March 2022 11:10 (20 minutes)

In this talk, we will present the methodology of recovering filaments from galaxy samples in the Sloan Digital Sky Survey (SDSS-IV) through directional density ridges, which can be practically estimated via our proposed Directional Subspace Constrained Mean Shift (DirSCMS) algorithm. The algorithm takes into account the nonlinear geometry of a celestial sphere on which the galaxy samples lie and thus potentially yields less biased estimators of the underlying filament structures on any 2D slices of the Universe. Moreover, the entire method can be directly generalized to detect the cosmic filaments in the 3D (RA,DEC,Redshift) space through directional-linear KDE and density ridges. The correlations between some galaxy properties and their proximity to our filaments will be also studied.

Presenter: ZHANG, Yikun (University of Washington, Seattle)

Session Classification: Day 5 Morning