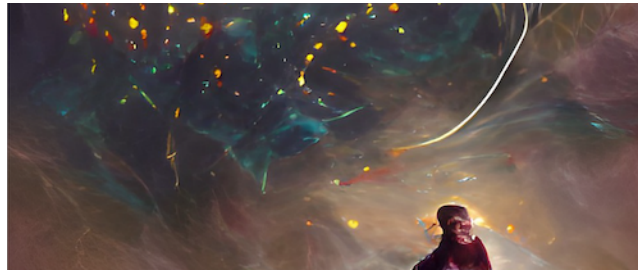


Cosmic Cartography 2022: Exploring the Cosmic Web and Large-Scale Structure



Contribution ID: 21

Type: **not specified**

the Cosmic Web: Structural Complexity, Connectivity and Dynamics of the Megaparsec Universe

Tuesday, 8 March 2022 15:35 (30 minutes)

To study the dynamical evolution and connectivity of the cosmic web, we describe our adhesion model of cosmic structure formation based on Voronoi and Delaunay tessellations. Subsequently, we describe how a phase-space analysis allows us to assess the growth of structural complexity in terms of the emergence of singularities and caustics. We indicate how the connections that emerge out of this hierarchically evolving weblike network can be quantified in terms of persistent homology. With our Nexus multiscale morphology formalism we explore the gravitational influence of structural components of the cosmic web. Filaments represent the most outstanding force in the Universe. However, it is the dynamical influence of voids that determines the pattern and connectivity of the cosmic web.

Presenter: VAN DE WEYGAERT, Rien (Kapteyn Astronomical Institute, Univ. Groningen)

Session Classification: Day 2 Afternoon