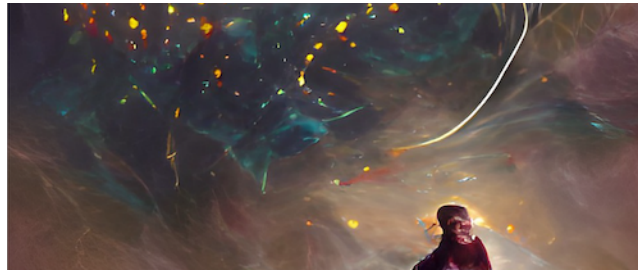


Cosmic Cartography 2022: Exploring the Cosmic Web and Large-Scale Structure



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Gas-phase environmental effects in the Spiderweb protocluster at $z=2.16$

Wednesday, 9 March 2022 11:20 (20 minutes)

We use VLT/KMOS to investigate the role of the environment in the evolution of galaxies in the Spiderweb protocluster at $z=2.16$. Based on $H\alpha$ and [NII], we measure SFRs and metallicities for 39 protocluster members as a function of local density and global environment properties. Galaxies embedded in this structure display SFRs compatible with the Main Sequence, and slightly enhanced metallicity values (~ 0.1 dex) compared to their coeval field counterparts. Furthermore, we explore the gas fraction-gas metallicity diagram for a few galaxies with molecular gas masses measured by VLA/ATCA using CO(1-0). In the context of the gas-regulator model, our objects are consistent with relatively low mass loading factors, suggesting lower outflow activity than field samples at similar redshift and hinting at the onset of environmental effects. We discuss the implications of these results on different scenarios of environmentally driven evolution during the early stages of massive cluster assembly.

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