



Contribution ID: 116

Type: Poster

Deciphering Black-Hole Physics with Modern Machine-Learning Methods

Supermassive black holes reside in the center of almost every galaxy. Today's supermassive black holes are mostly dormant (like the one at the center of our Milky Way), but in the past, they were actively accreting large amounts of matter and releasing vast amounts of energy. Galaxies with the brightest, most active supermassive black holes, called active galactic nuclei (AGN), are the most luminous objects in the universe. AGNs show many visible and ultraviolet emission lines, which probe the accreting material's physical conditions and the black hole's properties.

We discuss our work towards building a generative model of AGN spectra that will help us to study correlations between emission lines to derive insight into the accretion process, starting from a model to cluster AGN spectra directly using spectral input.

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Session Classification: Posters

Track Classification: New York