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Type : **Contributed talk**

Measuring Simulated Circumgalactic Medium Turbulence with Emission-Weighted Projected Velocity Structure Functions in FOGGIE

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The spatially-resolved kinematics of line emission from the circumgalactic medium (CGM) of a galaxy can contain information about the CGM turbulence, which may play an important role in galaxy evolution. Due to the region's diffuse nature, there have been limited observations of low-redshift CGM emission until recent efforts that use spatially-resolved emission line kinematics to probe CGM turbulence. We use velocity structure functions (VSFs) as a measure for the properties of turbulence using the high-resolution cosmological zoom-in FOGGIE simulations. We focus on the location of the “turnover” in the VSF slope, often used as a measurement of the turbulence driving scale, and study how resolution, measurement area size, projection effects, and gas temperature influence the inferred CGM turbulence driving scale. We find that projection significantly lowers the VSF normalization but we do not find significant differences in the slope between 3D VSFs and emission-weighted projected 2D VSFs. We find that the size of the area used to measure the VSF, which can be thought of as the size of the emission nebula for a given instrument sensitivity, correlates directly with the turnover location in the VSF. These dependencies should be considered when using VSFs to interpret CGM turbulence from emission data, as projection, resolution and sensitivity constraints, and the temperature of the gas probed will all have a measurable effect on the VSF structure and the corresponding inferred turbulent properties.

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No

If you are selected for a poster, would you be interested in giving a short flash talk on your work?

Yes

What is your career level?

MSc

Which keyword describes the area of focus of this talk?

Galaxies

Primary author(s) : BOUCHEREAU, Helena

Presenter(s) : BOUCHEREAU, Helena

Session Classification : Galaxies