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Visualization and Analysis of Synthetic Observations of Star Forming Regions MICHELLE BORKIN, Harvard University, CHRISTOPHER BEAUMONT, Institute for Astronomy, University of Hawaii, THOMAS ROBITAILLE, Max Planck Institute for Astronomy, STELLA OFFNER, ALYSSA GOODMAN, Harvard-Smithsonian Center for Astrophysics — We present multidimensional visualizations used for the exploration, analysis, and comparison of simulated synthetic observations and real astronomical observational data cubes. By comparing synthetic observations of simulated star forming regions to real observational radio data cubes utilizing 2D and 3D visualization techniques we are able to more effectively and efficiently compare these types of data, in particular their hierarchical structure and kinematic features such as outflows or expanding shells. For our synthetic data we use simulations performed with the ORION adaptive mesh refinement (AMR) three-dimensional gravito-radiation-hydrodyanics code which follow the collapse and evolution of protostars down to AU size scales. The synthetic observations are produced using MOLLIE, a molecular line radiative transfer code. Through comparisons of 2D dendrogram representations of the star forming region's hierarchical structure, 2D column maps, and 3D data visualizations we are able to gain a better understanding of the physical structures and kinematic features, and enhance the interpretation of astronomical data cubes.

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