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Construction of a Distance Estimator Based on the Kinematics and Morphologies of High Velocity Clouds KRISTY SAKANO, University of North Carolina at Chapel Hill — This project focused on creating a method to estimate the three dimensional orientation of high velocity clouds in the Galactic halo, and to quantify its reliability. Within the Galactic halo, a large population of neutral hydrogen clouds (also known as high velocity clouds) exists, called such as they do not match with the standard Galactic rotation pattern, with bulk motions in excess of 70-90 km/s of the local standard of rest. To determine the origin of high velocity clouds, accurate distances to these objects are needed. This project's purpose is on building a distance estimator based on the morphologies and kinematics of high velocity clouds using the cloud's pitch angle, the angle between cloud trajectory, and the line-of-sight. Currently, I am developing a function to rotate the body of the constant-density high velocity cloud with respect to the line-of-sight to explore the kinematic signatures of high velocity cloud evolution under different viewing angles. This simulator must be applicable for a generic high velocity cloud viewed from any perspective, capitalizing on the pitch angle function to alter the rotation of the modeled cloud and map the velocity along the line of sight.

Kristy Sakano
University of North Carolina at Chapel Hill

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