

Poster Summary

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Our group designed an algorithm that can identify and follow stellar streams using Gaia EDR3. Stellar streams are a group of stars (galaxy or cluster) that have been stretched and strung out due to the tidal forces of our galaxy; many of which follow complex trajectories around and within our galaxy. Streams may contain valuable information pertaining to the gravitational field and the stars contained within so it is helpful to develop an algorithm to extract information about these structures. This algorithm starts with a lattice of points along the galactic plane. The algorithm will randomly choose and remove a point from this lattice and turn it into a dataset containing all stars near this point. The algorithm then determines whether that dataset has a stellar stream, if it does, it follows or tracks the stream, if it does not then it removes that dataset from consideration. The end result is hoped to track large portions of stellar streams. Certain properties of these stellar streams could help us nail down which dark matter theory is correct. For example, theories of dark matter predict that there are clumps of dark matter in our galaxy and depending on the theory, the size and number of these clumps vary. These clumps can collide with stellar streams and depending on the frequency and size of resulting break in the stellar stream could agree with certain theories more than others.