

Those who part the streams

A story of globular clusters and dark matter

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We investigate the impact of Milky Way globular clusters on stellar streams, focusing on gravitational flybys that produce gaps. A goal of the community is to use these gaps to detect dark-matter subhalos, as predicted by LCDM. As data on stellar streams improve in both quality and quantity, it becomes vital to understand baryonic sources that can create similar features. Our study centers on the Palomar 5 stream, using collisionless N-body simulations with a Monte Carlo method to account for observational uncertainties and explore various impact scenarios. Results indicate that massive globular clusters can create observable gaps, especially in the colder regions of the stream, where low velocity dispersion increases vulnerability. We also find that an erasure process, linked to the release of epicyclic particles, can obscure gaps. I will discuss these findings, the underlying physical mechanisms, and their implications for dark matter subhalo research.