

Ghostly Streams and Phantom Galaxies

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Abstract

The history of the Galaxy is imprinted in the kinematics and chemical properties of the stars in the stellar halo. Their study allows us partially to reconstruct the Galactic past because the time required for stars in the halo to exchange their energies and momenta is very long compared with the age of the Galaxy. This field has been revolutionised in recent years by data from the Sloan Digital Sky Survey Data, which has revealed a super-abundance of substructure. There are ghostly streams from disrupting and coalescing globular clusters, analogues of meteor streams along old cometary paths in the Solar system. There are ultrafaint phantom galaxies composed of old and faint stars, so puny that the entire galaxy is outshone by a single red giant star like Betelgeuse. Above all, dominating the Galactic halo, there is the magnificent and puzzling double arch of the Sagittarius stream criss-crossing the whole sky.