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Connecting the first stars in the universe to the Milky Way

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Galaxies are complicated beasts - many physical processes operate simultaneously, and over a huge range of scales in space and time. As a result, creating accurate models of the formation and evolution of galaxies over the lifetime of the universe presents tremendous challenges. In this talk I will discuss these challenges and their solutions, and will explain how large-scale computational models can be used to gain insights into the very first galaxies that formed in the universe (over 13 billion years ago!), and how we can use both these computational models and observations of the Milky Way and its neighbors to infer how galaxies have grown and evolved in the intervening time.