

Resolving the Distant Universe with Gravitational Lensing

In the past decade strong gravitational lensing has emerged as a powerful tool for studying the distant universe. Massive structures distort space-time, resulting in rare but spectacular strong lensing events in which those massive structures act as "natural telescopes", magnifying our view of distant object behind them. Over the past two decades, a wave of wide-field astronomical surveys have enabled the discovery of large samples of strong lensing systems that provide highly magnified views of the high-redshift universe. I will summarize ongoing work to unlock the scientific potential of these new strong lens samples to provide key insights into the physical properties of star-formation in the distant universe on sub-galactic scales. I will focus on current effort that highlights the benefits of combining our most powerful telescopes-such as the Hubble Space Telescope, the Chandra X-ray Observatory, and the James Webb Space Telescope-with some of the strongest "natural telescopes" to address outstanding questions about how stars and galaxies formed at early cosmic times.