The most luminous, dusty star-forming galaxies at high redshift discovered by Herschel: the ALMA view

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Abstract

Very high redshift galaxies have been discovered by optical and near-infrared deep surveys. However, they are typically not very massive and present star formation rates up to several hundred solar masses per year (Finkelstein et al. 2013, Nature, 502, 524). The Herschel Multi-tiered Extragalactic Survey (HerMES, Oliver et al. 2012, MNRAS, 424, 1614), the largest project that has being carried out with the Herschel Space Observatory, has discovered massive, maximum-starburst galaxies up to a redshift of 6.34 (Riechers et al. 2013, Nature, 496, 329; Dowell et al. 2014, ApJ, 780, 75). The discovery of these dusty star-forming galaxies (DSFGs) at high-z challenges current theoretical models of galaxy formation and have become a critical player in our understandig of cosmic galaxy evolution. We will describe the method we had developed to find these dusty, massive, star forming galaxies at z $>$ 4 based on Herschel/SPIRE colours and present results from multi-wavelength follow-up observations, including recent ALMA cycle 2 spectroscopy.