

ABSTRACT

VACCARI, Mattia

SKA-SA / University of the Western Cape

The Spitzer-Selected Multi-Wavelength Survey

Spitzer-Selected Multi-Wavelength Data Fusion for Herschel Galaxy Formation & Evolution Studies [Mattia Vaccari (SKA-SA/UWC) & Lucia Marchetti (Padova) & Eduardo Gonzalez-Solares (Cambridge) & the HerMES/SERVS/SWIRE Consortia] Infrared extragalactic surveys contain a substantial amount of information about the origin of galaxies and active galactic nuclei and thus about the evolutionary history of star formation, metal production and gravitational accretion, presenting a widely complementary view with respect to optical galaxy surveys. Throughout the cold and ongoing warm mission, Spitzer has therefore carried out a number of deep and wide blank-field extragalactic surveys within the most established "Cosmic Windows" previously targeted by ground- and space-based observatories alike. We present a Spitzer-selected multi-wavelength catalog combining most Spitzer blank-field extragalactic surveys (and in particular SWIRE and SERVS, totaling ~ 5 million sources over $\sim 70 \text{ deg}^2$) with spectro-photometric databases spanning the FUV-to-FIR wavelength range (GALEX/SDSS/CFHTLS/INTWFS/2MASS/UKIDSS/NED-SPECZ). The database naturally lends itself to the optimization of aperture matching between flux measurements carried out at different wavelengths, so as to be able to efficiently and reliably model the panchromatic SED fitting of galaxies and thus determine the photometric redshifts and physical properties such as stellar masses, star formation rates, dust attenuation, mass and temperature. We outline the overall properties of the "data fusion", describe its exploitation to provide the most accurate determination to date of the luminosity function of Spitzer and Herschel sources and outline opportunities to exploit it in the framework of the HerMES Herschel/SPIRE Key Program to effectively select candidate targets for follow-up observations by ALMA, JWST and the ELTs to best exploit their exquisite sensitivity and resolution.