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Title:	The Star Formation Reference Survey – III. A multiwavelength view of star formation in nearby galaxies
Authors:	Mahajan, Smriti (/jspui/browse?type=author&value=Mahajan%2C+Smriti)
Keywords:	Galaxies: star formation Radio continuum: galaxies Infrared: galaxies
Issue Date:	2019
Publisher:	Oxford Academic
Citation:	Monthly Notices of the Royal Astronomical Society, 482(1), pp. 560-577.
Abstract:	We present multiwavelength global star formation rate (SFR) estimates for 326 galaxies from the Star Formation Reference Survey in order to determine the mutual scatter and range of validity of different indicators. The widely used empirical SFR recipes based on 1.4 GHz continuum, 8.0 μm polycyclic aromatic hydrocarbons (PAHs), and a combination of far-infrared (FIR) plus ultraviolet (UV) emission are mutually consistent with scatter of ≤ 0.3 dex. The scatter is even smaller, ≤ 0.24 dex, in the intermediate luminosity range $9.3 < \log(L_{60\mu\text{m}}/L_{\odot}) < 10.7$. The data prefer a non-linear relation between 1.4 GHz luminosity and other SFR measures. PAH luminosity underestimates SFR for galaxies with strong UV emission. A bolometric extinction correction to far-UV luminosity yields SFR within 0.2 dex of the total SFR estimate, but extinction corrections based on UV spectral slope or nuclear Balmer decrement give SFRs that may differ from the total SFR by up to 2 dex. However, for the minority of galaxies with UV luminosity $> 5 \times 10^9 L_{\odot}$ or with implied far-UV extinction < 1 mag, the UV spectral slope gives extinction corrections with 0.22 dex uncertainty.
Description:	Only IISERM authors are available in the record.
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