



## **VLBI Observations of the Faint ( $\mu$ Jy) Extragalactic Radio Sources- The wide-Field VLBA & EVN GOODS-N and SPARCS-N 1.4 GHz Surveys**

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A combination of sensitivity and high angular resolution imaging over a range of spatial scales (arcsec to mas) is required to understand the star formation history (SFH) and its evolution with cosmic time. These high sensitivity and high angular resolution surveys are crucial in characterizing relative contribution of radio emission associated with either star-formation or AGN in galaxies. This and a range of galaxy evolution topics are uniquely and robustly being tackled through wide-field VLBI surveys.

I will present results from deep wide-field VLBI surveys of: 1) the GOODS-North field with the EVN and the VLBA, combined with lower arcsec resolution study of the same field with the JVLA and e-MERLIN; and, 2) the SPARCS-North field with the EVN+e-MERLIN. These surveys provide deep and high spatial dynamic range (from arcsec to mas resolutions) observations for: i) the robust determination of the compact radio AGN components; ii) the first multi-resolution view of the transition between compact AGN and diffuse SF radio components in a moderate sample of galaxies; iii) contribute to multiple key technical verifications relevant to SKA-Pathfinders such as source finding and flux scaling accuracy between different instruments; and iv) aid in planning of future SKA(-VLBI) deep surveys.