

## MWA SHI SCIENCE PROJECT PROPOSAL

[Date circulated: 2020/12/07]

<b>Project Title:</b>	Absolute flux density calibration of the Sun using in-field sources with the MWA
<b>Principal Contact:</b> The Principal Contact must be a member of the SHI collaboration (as defined in the MWA SHI Policy) and <i>cannot</i> be a student. Please provide institution affiliation and email address.	Divya Oberoi National Centre for Radio Astrophysics, Tata Institute for Fundamental Research, Pune, India. div@ncra.tifr.res.in
<b>List of people involved:</b> Please specify all the people who are expected to contribute to this project	Surajit Mondal (Graduate student, NCRA-TIFR), Devojyoti Kansabanik (Graduate student, NCRA-TIFR), Divya Oberoi, Ayan Biswas (Graduate student, NCRA-TIFR), Shilpi Bunia (Graduate student, DIAS, Ireland)
<b>Anticipated duration of the project:</b>	2020/06/15 – 2021/04/15
<b>Is this project a part of the requirements for obtaining a degree:</b> If yes, please provide some details	No
<b>Project Summary:</b> Solar observations typically use additional attenuation in the signal path as compared to the usual interferometric observations, while the flux density calibrators are observed without any additional attenuation in the signal path. The factor with which the observed flux density of the Sun needs to be scaled for the given choice of signal attenuation needs to be determined observationally. The objective of this work determine this flux density scaling factor. This is achieved using the serendipitous presence of some of the strongest radio source in the wide MWA FoV (Crab and VirgoA), and the high imaging dynamic range capability provided by our solar imaging pipeline (AIRCRS; Mondal et al., 2019), which allow us to see numerous background sources the flux density of which is available from the GLEAM survey. While this work primarily uses MWA data which is already in public domain, one of the 4 datasets used comes from recent G0002 observations (June 2020).	