

BUILDING THE NGRADAR SCIENCE ADVISORY COUNCIL (SAC) AND TECHNICAL ADVISORY COUNCIL (TAC). F. Paganelli¹, P.A. Taylor¹, B. Hawkins¹, A.J. Beasley², A. Symmes², W.F. Briskin³, J.M. Jackson⁴, G. Watts⁴, D. Egan⁴, ¹National Radio Astronomy Observatory, Central Development Laboratory (1180 Boxwood Rd., Charlottesville, VA 22903, USA; fpaganel@nrao.edu), ²National Radio Astronomy Observatory (580 Edgmont Rd., Charlottesville, VA 22903, USA), ³National Radio Astronomy Observatory, Domenici Science Operations Center (1003 Lopezville Rd., Socorro, NM 87801, USA), ⁴Green Bank Observatory (155 Observatory Rd., Green Bank, WV 24944, USA).

Introduction: The National Radio Astronomy Observatory (NRAO) and Green Bank Observatory (GBO) are working on the next-generation planetary radar system (ngRADAR) project aiming to expand radar research activities. The project aims at the development of the concept design for a 500 kW Ku-band transmitter to be installed on the Green Bank Telescope (GBT) leveraging the 100-m dish for enhanced beam-forming and range capabilities. The concept uses the Very Long Baseline Array (VLBA) as the receiving system, and future expansion envisions receiving with the next-generation Very Large Array (ngVLA). Over the last 3 years NRAO, GBO and external partner Raytheon Intelligence & Space (RIS) have worked on the deployment and testing of a 700 W Ku-band transmitter. Results from observation campaigns of November 2020, and March 2021 produced the ground-work and support for the NSF's Mid-Scale Research Infrastructure 1 (MSRI-1) 2-year award, started in November 2021, to develop the concept design of a 500 kW Ku-band transmitter for GBT. We are now in the second year of the award, ending in late 2023, with expectation to complete the internal conceptual design review in May 2023, and external review by September 2023.

Given NRAO's and GBO's recent activities and interest in broader user community involvement in the science and technical aspects of the ngRADAR project, the purpose of this abstract is to solicit a call for membership for a Science Advisory Council (SAC) and Technical Advisory Council (TAC).

Background: Community support to the NRAO/GBO ngRADAR effort is envisioned through two different groups: the Science Advisory Council (SAC) and the Technical Advisory Council (TAC).

The ngRADAR SAC and TAC will be the cornerstones of a program that aims to fully engage the planetary radar, radio astronomy, computing, radar and radio engineering communities through feedback and guidance as we move towards the preliminary and then final design of the ngRADAR system.

SAC overview: The ngRADAR Science Advisory Council (SAC) is the interface between the scientific community and NRAO/GBO, providing feedback and

guidance directly to the ngRADAR Project Office on issues that affect the scientific design.

TAC overview: The ngRADAR Technical Advisory Council (TAC) acts as the interface between NRAO and engineering and computing experts within the radar and radio astronomy community, providing feedback and guidance as we move towards the preliminary and then final design for the system ngRADAR system.

Request for input: The ngRADAR Team is requesting participation from the science and technical planetary radar community via membership of the ngRADAR SAC and TAC. Membership will be determined through open nominations and a selection process involving NRAO/GBO staff and the community.

The SAC will be selected to cover broad range of expertise relevant to planetary radar science, use cases scenarios, and data analysis. The TAC will be selected to cover a broad range of technical expertise relevant to radar-array systems, antennas, optics, pointing receiver systems, cryogenics, data transmission, data processing. Further details will be provided at the LPSC. The summary of the ngRADAR project can be viewed under the "ngRADAR for Scientists" page (<https://ng radar.nrao.edu/page/gbt>).

A future step will envision a call to participation in the ngRADAR Science Working Groups (SWGs), which will be completely voluntary. The purpose of the SWGs will be to act as the primary user community for the facility; to inform the project of needs and expectations; and to inform colleagues about the project's design, capabilities and status and how it can benefit their science. We encourage students and postdoctoral fellows to join the SWGs, even if it is just to learn about the project.

Feedback to the lead author is welcome, preferably prior to, or at the LPSC. We hope to complete the selection process of SAC and TAC by May 2023, and possibly include an addendum of selected SAC and TAC with the ngRADAR concept design report to NSF.

References: [1] Paganelli, F. et al. (2022), [Next Generation Ground-Based Planetary Radar Science at NRAO](#), DPS54. [2] Paganelli, F. et al. (2022), [Next Generation Ground-Based Planetary Radar Science at](#)

[NRAO](#), IAU GA2022, FM 8-4, 1313. [3] Taylor, P. et al. (2022), [The Next Generation Planetary Radar System on the NSF Green Bank Telescope](#), AMOS. [4] Wilkinson, S.R., et al. (2022), [A Planetary Radar](#)

[System for Detection and High-Resolution Imaging of Nearby Celestial Bodies](#), Microwave Journal, 65, 1.

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