

PRATUSH Telescope

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PRATUSH Telescope Latest News

Scientists at the Raman Research Institute have proposed a pioneering mission called PRATUSH designed to unlock the Cosmic Dawn.

About PRATUSH Telescope

- **Probing ReionizATIon of the Universe using Signal from Hydrogen (PRATUSH)** is a radio telescope to be sited on the moon's far side.
- It is built by **the Raman Research Institute (RRI)** in Bengaluru with active collaboration from the **Indian Space Research Organisation (ISRO)**.
- PRATUSH will carry a wideband **frequency-independent antenna**, operating over the frequency band **30-250 MHz**, a self-calibratable **analog receiver**, and a **digital correlator** with high spectral resolution.
- The observing strategy of PRATUSH will be to **continually observe large sky regions**, and recording spectra of the beam-averaged radio emission with a high spectral resolution of 100 kHz.

- The nominal lifetime of the **payload will be two years** for achieving high signal-to-noise ratio with sufficient sky-coverage.
- The **preferred orbit for the payload** will be a circumlunar orbit to enable a measurement of radio sky spectrum from the **dark and far side of the Moon**.
- At the heart of PRATUSH's innovative design lies an unexpectedly modest piece of technology: a **compact single-board computer** (SBC). Built initially around a **Raspberry Pi**, the SBC is serving as the **master controller for the radiometer system**.
- The SBC coordinates PRATUSH's entire operation:
 - Managing the antenna that collects cosmic signals
 - Overseeing the analog receiver that amplifies them
 - Controlling the **Field Programmable Gate Array** (FPGA) that converts these signals into digital fingerprints, mapping the brightness of the sky at different frequencies
 - Recording and **storing high-speed data streams** while also carrying out preliminary data processing and calibrations.

Source: PIB

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