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Unveiling the VGOS Signal Chain at the Kokee Park Geophysical Observatory

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MIT Haystack Observatory, as part of the NASA Space Geodesy Program, is delivering the first VGOS-compliant Signal Chain to the Kokee Park Geophysical Observatory (KPGO), Hawaii, and will soon be integrating and commissioning the KPGO 12-m station.

We will describe the Signal Chain subsystems and highlight the design and performance of the cryogenically cooled frontend. This incorporates a broadband Quad Ridge Flared Horn (QRFH) feed and Indium Phosphide low-noise amplifiers, both developed by the California Institute of Technology. The talk will also cover the design and performance of a Cable Delay Measurement System (CMDS) and the salient features of a Calibrator module that enables phase and noise calibration as well as the cable delay measurements.

We expect to present some early results from the commissioning phase of KPGO including aperture efficiency, SEFD across the band, and delay stability. We will also discuss possible approaches towards RFI mitigation, enhanced receiver sensitivity and dynamic range, and other forward-looking technologies.

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