

IMPLEMENTATION OF CMOS MILLIMETER-WAVE DEVICES FOR ROTATIONAL SPECTROSCOPY

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The extension of radio-frequency CMOS circuitry into millimeter wavelengths promises the extension of spectroscopic techniques in compact, power efficient systems. We are now exploring the use of CMOS millimeter devices for low-mass, low-power instrumentation capable of remote or in-situ detection of gas composition during space missions. This effort focuses on the development of a semi-confocal Fabry-Perot cavity with mm-wavelength CMOS transmitter and receiver attached directly to a cavity coupler. Placement of the devices within the cavity structure bypasses problems encountered with signal injection and extraction in traditional cavity designs and simultaneously takes full advantage of the miniaturized form of the CMOS hardware. The presentation will provide an overview of the project and details of the accomplishments thus far, including the development and testing of a pulse modulated 83-98 GHz transmitter.