**Frequency-Stabilized Cavity Ring-Down Spectroscopy of $CO_2$ in Support of Remote Sensing**

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The carbon dioxide (20013)←(00001) band at 2.06 um was measured with frequency-stabilized cavity ring down spectroscopy. The high signal to noise ratio of these measurements allows for line shape analysis, including Dicke narrowing and speed dependence. Proper line shape choice and parameterization of these values is critical for remote sensing retrievals including OCO-2, a NASA satellite measuring global sources and sinks of carbon dioxide.