# 2018 SEMINAR SERIES

## Accurate Spectroscopy of the Stable and Radioactive Carbon Isotopologues of $CO_2$

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Achieving high accuracy in molecular spectroscopy requires both precise instrumentation and highly controlled sample conditions. Here we report continuous-wave laser cavity ring-down spectroscopy of $^{14}C$, $^{13}C$ and $^{12}C$ isotopologues of $CO_2$, laboratory measurements which enable the retrieval of absolute isotopic amounts ($^{14}CO_2$) and amount ratios ($^{13}C/^{12}C$) within a sample. Leveraging highly accurate experimental measurements and *ab initio* calculations of transitions intensities, we explore the gas-calibration-free optical sensing of trace isotopologues in both pure $CO_2$ and $CO_2$-in-air, as well as propose a path towards artifact-free scales in carbon isotope analysis with traceability to true invariants of nature.

Tuesday • November 13, 2018 • 3:30 PM
Refreshments 3:15 PM
NCAR • Foothills Laboratory • 3450 Mitchell Lane
Building 2 • Large Auditorium • Room 1022
Webcast: http://ucarconnect.ucar.edu/live

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