Department of Physics and Astronomy

Physics & Astronomy Colloquium

Presents

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Thursday, September 13, 2018
4:10 pm, Webster Room 17

"Frequency Combs and Precision Measurement in the Real World"

Frequency combs are a novel laser source that have historically been exploited in an exciting range of laboratory-bound precision measurements. This talk will discuss the development of a fieldable frequency combs and high precision field measurements with these devices focusing in particular on remote sensing. Using frequency combs in pairs we can create high-resolution broadband spectrometers that can see small changes in gas concentrations over kilometer paths. In the near-IR this unique capability allows a host of new sensing modalities for detection and quantification of greenhouse gasses. For instance methane leaks as small as 6 scfh (~1/4 the respiration rate of a human being) can be detected from over 1 kilometer away potentially allowing for simultaneous leak monitoring of hundreds of oil and gas assets from a single spectrometer. Similarly, novel mid-IR frequency combs should allow for detection of more complex industrial pollutants in the open air. With the current rapid evolution of infrared laser technology this application space is will continue to expand.

Please meet our guest speaker and share in refreshments,
3:45-4:10 p.m. in the foyer on floor G above the lecture hall

Host: Dr. Peter Engels