

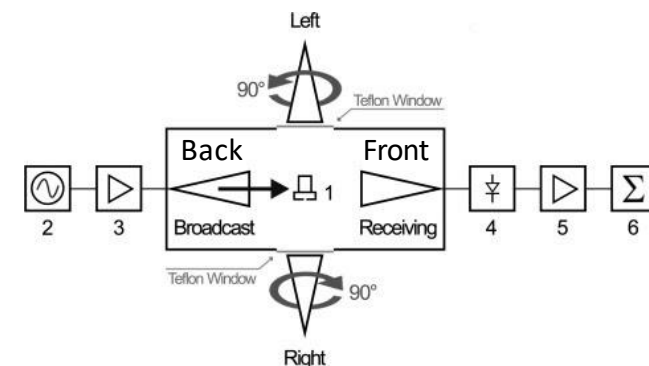
# Phase Determination in Quadrature Detection Scheme Microwave Spectroscopy

CHRISTIAN SWANSON (cas2gp@mst.edu), NICOLE MOON, AMANDA DUERDEN, JOSHUA E. ISERT, G. S. GRUBBS II, Department of Chemistry, Missouri University of Science and Technology, Rolla, MO, USA.

- Experiments were performed on a Chirped Pulse Fourier Transform Microwave Spectrometer
- Unlike traditional microwave experiments, four antennae (90° apart) were used to detect molecular signal instead of just the front antenna
- Our goal was to develop a method for determining the phase difference between receiving antennae so that the data could be utilized

If the data from the left, right, or back antennae are added to data from the front antenna without any adjustments for phase differences, there will be a large decrease in overall signal to noise.

Methods of adjusting the phase of collected FIDs will be explored in the future.



FID Addition	11307.1848 MHz	10937.4958 MHz	12635.1309 MHz
Front+Right	-69%	-26%	-52%
Front+Left	-79%	-77%	-67%
Front+Back	-80%	-97%	-21%

Spectral Addition	11307.1848 MHz	10937.4958 MHz	12635.1309 MHz
Front+Right	-29%	-4%	-35%
Front+Left	-70%	-75%	-63%
Front+Back	-45%	-44%	-37%

1,3-Difluorobenzene

