

## DETECTION OF VAN DER WAALS VIBRATIONAL TRANSITIONS USING A NEW MW-THz DOUBLE RESONANCE TECHNIQUE

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A new double resonance technique has been developed that can be used for the detection of low frequency van der Waals vibrations. The technique uses backward wave oscillators (OB-24, OB-30, ISTOK), which are phase-locked to a KVARZ mm-wave synthesizer (78-118 GHz), as pump sources,<sup>b</sup> and a pulsed jet cavity Fourier transform microwave spectrometer for detection. Initial measurements were done on the Ar-CO system<sup>c</sup> for which the THz frequencies of ro-vibrational transitions from the ground to the first excited van der Waals bending state were known from previous measurements.<sup>d</sup> Resolving power and sensitivity of the technique will be discussed.

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<sup>c</sup>Y. Xu and A. R. W. McKellar, *Mol. Phys.* 88, 859 (1996).

<sup>d</sup>M. Hepp, R. Gendriesch, I. Pak, F. Lewen, and G. Winnewisser, *J. Mol. Spectrosc.* 183, 295 (1997).