FASSST CAVITY RINGDOWN SPECTRSCOPY OF ATMOSPHERICALLY BROADEN LINESHAPES IN THE MILLIMETER SPECTRAL REGION.

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Millimeter and sub-millimeter spectroscopy ordinarily takes advantage of the sharpness of Doppler or near Doppler limited linewidths to separate molecular effects from the systematic technical effects of spectrometers. As a result, spectrally broader effects that manifest themselves at or near atmospheric pressure are more difficult to study experimentally. We have previously described an approach to the study of these phenomena, FASSST (FAst Scan Submillimeter Spectroscopy Technique) cavity ring down spectroscopy. Our previous studies with this system have been of continua effects. We have extended this experimental approach to include the study of lineshape effects in the wings of lines at atmospheric pressures and their separation from the continua effects that coexist. The species to be described in this talk include CO and O_3. Because of the reactivity of O_3, the speed of the system (observation of 100 GHz (6000 ring-downs) in a few seconds), freezes any chemical reactions and preserves relative intensities and lineshapes.