

IT IS ALL ABOUT PHASE AND IT IS NOT STAR TREK

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The marriage of chirped pulse millimeter-wave spectroscopy with a buffer gas cooled molecular beam source has yielded an increase in spectral velocity (number of resolution elements per unit time) of a factor of one million! But it gets even better. Essential information is encoded not just in the frequencies of the transitions, but also in the relative intensities and especially phases of the transitions. Transitions between Rydberg states of atoms and molecules are an ideal test ground for techniques that fully exploit these newly accessible observables.