

Abstract Submitted
for the MAS17 Meeting of
The American Physical Society

Sunspot oscillations in the umbral region of AR 12470 observed with ALMA and BBSO YI CHAI, New Jersey Inst of Tech — We present a study of waves and oscillations in the umbral region of AR 12470 using the data from both the Atacama Large Millimeter/submillimeter Array (ALMA) and NJITs Big Bear Solar Observatory (BBSO), along with spacecraft data from the Interface Region Imaging Spectrometer (IRIS) and the Solar Dynamics Observatory (SDO), for an approximately 1-h period on December 17, 2015. The high cadence of ALMA images (2 s) allows us to well-resolve the three-minute oscillations of temperature in the sunspot chromosphere. We performed Fourier analysis of the mm and H-alpha data sets to achieve power spectra as well as phase information. A comparison of phase information between different wavelengths of the same region provides the phase relationship between wavelengths, which are sensitive to different physical parameters and come from different heights in the chromosphere. We discuss possible interpretations of the observed phase relationships, and discuss future work to be done.

Yi Chai
New Jersey Inst of Tech

Date submitted: 29 Sep 2017

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