MILLIMETER- WAVE SPECTRUM OF PYRIDAZINE

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Pyridazine, the *ortho* dinitrogen substituted analogue of benzene, was chosen as an inaugural project for our newly modernized millimeter-wave absorption spectrometer. Pyridazine has a substantial dipole of 4.22 debye, and is thus a candidate for astronomical detection. If detected, it would be among the first $6\pi$ electron aromatic systems to be observed in space. Spectra in the range of 260-360 GHz were collected at room temperature. Pure rotational spectra for 10 vibrational states and 4 naturally occurring isotopomers are assigned and reported. Among the vibrationally excited states, both Coriolis and Fermi coupling is observed. Anharmonic vibration-rotation calculations using the CFOUR package are used to find and assign transitions for the vibrationally excited states. These calculations at the CCSD(T)/cc-pVTZ level provide excellent predictions for the rotational constants of these excited states.