ROTATIONALLY-RESOLVED INFRARED SPECTROSCOPY OF CH_3F ISOLATED IN SOLID PARAHYDROGEN

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The high-resolution infrared spectrum of CH_3F isolated in solid parahydrogen is studied via FT-IR methods. The CH_3F doped parahydrogen crystals are prepared using the rapid vapor deposition method developed by Fajardo and co-workers. CH_3F was studied as a prototypical symmetric top molecule in a quantum cavity. The infrared spectroscopy suggests CH_3F undergoes nearly free rotation indicating it occupies a single substitution site. Spectroscopic results and analysis on the CH_3F rovibrational dynamics and nuclear spin relaxation will be presented.