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Paper: High Resolution Spectroscopy of Ammonia in a Hollow-Core Fiber

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Abstracts:

We have demonstrated frequency modulation saturation spectroscopy of the Î½1 +Î½3 band of ammonia in hollow-core photonic bandgap fibers (HCâ€“PBFs). Previously blended lines have been resolved and the

corresponding molecular transitions assigned. Crossâ€“over resonances are observed between transitions that do not share a common level. We have measured the pressure dependence of the line shape and determined the collisional selfâ€“broadening coefficients for ammonia. The many absorption

lines of ammonia in the 1.5 Î¼m wavelength region are potential frequency references lines for optical communication as well as candidates for spectroscopic trace gas monitoring.