HIGH PRECISION MID-IR SPECTROSCOPY OF $^{14}N_2{}^{16}O$ NEAR 4.5 μm

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The sub-Doppler saturation spectrum of the $^{14}N_2{}^{16}O$ near 4.5 μm is studied using a mW-level DFG (Difference Frequency Generation) source. The DFG radiation is generated by a Ti:sapphire laser and a Nd:YAG laser amplified by a 10-W fiber amplifier in a 45-mm long PPLN (Periodically-Poled Lithium Niobate) crystal. The Nd:YAG laser is frequency-doubled and frequency stabilized on one $^{127}I_2$ hyperfine transition. The Ti:sapphire laser is locked onto the center of N_2O transition and its frequency is measured by an OFC (Optical Frequency Comb). In this talk, we will report our measurements of the fundamental band of N_2O near 4.5 μm.