ROTATIONAL SPECTROSCOPIC INVESTIGATION OF $(ortho\mathrm{H}_2)_N$-$\mathrm{N}_2\mathrm{O}$ and $(para\mathrm{H}_2)_N$-$\mathrm{N}_2\mathrm{O}$ VAN DER WAALS CLUSTERS

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High resolution microwave spectra of $(ortho\mathrm{H}_2)_N$-$\mathrm{N}_2\mathrm{O}$ and $(para\mathrm{H}_2)_N$-$\mathrm{N}_2\mathrm{O}$ clusters were studied in the frequency range from 5 to 21 GHz. The clusters were formed in a pulsed supersonic jet expansion and investigated using a Balle-Flygare type Fourier transform microwave spectrometer. Predictions for the microwave transition frequencies were based on the infrared work by Tang and McKellar [J. Chem. Phys. **123**, 114314 (2005)]. The ^{14}N nuclear quadrupole hyperfine structures were resolved and included in the spectroscopic fits of the various complexes. The resulting rotational and hyperfine constants were used to determine trends in the structural and dynamical properties of the clusters. The cluster moments of inertia increases smoothly as a function of N; superfluid effects are anticipated to begin to play a role at larger $(para\mathrm{H}_2)_N$-$\mathrm{N}_2\mathrm{O}$ cluster sizes.