THE PURE INVERSION-TUNNELING TRANSITION OF AMMONIA IN HELIUM DROPLETS

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The pure inversion tunneling transition of ammonia embedded in superfluid helium droplets has been measured for the two isotopomers $^{14}NH_3$ and $^{15}NH_3$. The transitions were found at 21.72 GHz for $^{14}NH_3$ and at 20.68 GHz for $^{15}NH_3$ and are therefore shifted by 1.97 GHz and 1.94 GHz to the red compared to the gas phase values of the two isotopomers, respectively [Pickett *et al.*, J. Quant. Spectrosc. Radiat. Transfer **60**, 883 (1998).]. The measured peaks consist of a broad background with a width at half maximum of 1.5 GHz and an unexpectedly sharp peak with a width at half maximum of only 15 MHz sitting on top of the broad background. The difference between gas phase and droplet spectra will be discussed and a interpretation of the complex line shape will be given.