

TESTING THE MORPHED POTENTIAL OF Ar-HBr USING TAMU COAXIAL PULSE JET SUB-MILLIMETER WAVE FAST SCAN SPECTROMETER WITH A FREQUENCY AND PHASE STABILIZED BWO

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The lowest frequency  $\Sigma$  bending vibrations of Ar-H<sup>79</sup>Br and Ar-H<sup>81</sup>Br have been recorded using TAMU fast scan BWO spectrometer with co-axial supersonic jet expansion. The fitted band origin was  $\nu_0 = 329611.4482(16)$  MHz, the excited state rotational constant was  $B = 1236.41359(22)$  MHz, the distortion constants were  $D_J = 0.0124740(36)$  MHz and  $H_J = -2.503(17) \times 10^{-6}$  MHz and the quadrupole constants were  $\chi_{aa} = 260.9552(79)$  MHz and  $D_{\chi_{aa}} = -0.03174(35)$  MHz for Ar-H<sup>79</sup>Br. The corresponding constants for Ar-H<sup>81</sup>Br were:  $\nu_0 = 329225.6995(15)$  MHz,  $B = 1226.77332(22)$  MHz,  $D_J = 0.0123085(37)$  MHz,  $H_J = -2.459(19) \times 10^{-6}$  MHz,  $\chi_{aa} = 217.8952(75)$  MHz, and  $D_{\chi_{aa}} = -0.02619(36)$  MHz. The values of  $\chi_{aa}$  and  $D_{\chi_{aa}}$  can be compared with the corresponding values predicted from a recently modeled complete vibrationally morphed potential of Ar-HBr and used for further optimization of that potential.