LASER SPECTROSCOPY OF THE $\tilde{A}\ ^2\Pi - \tilde{X}\ ^2\Sigma^+$ AND $\tilde{C}\ ^2\Pi - \tilde{A}\ ^2\Pi$ TRANSITIONS OF SrOD AND THE $\tilde{A}\ ^2\Pi - \tilde{X}\ ^2\Sigma^+$ TRANSITION OF BaOH

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Laser excitation spectroscopy of SrOD and BaOH and optical optical double resonance spectroscopy of SrOD have been carried out at high-resolution. SrOD and BaOH were produced by the reaction of metal vapor and D_2O/H_2O vapor in a Broida-type oven and in a laser ablation/molecular beam spectrometer, respectively. For SrOD, the $\tilde{A}\ ^2\Pi - \tilde{X}\ ^2\Sigma^+$ and $\tilde{C}\ ^2\Pi - \tilde{A}\ ^2\Pi$ transitions were observed and rotationally analyzed for the first time. Combined with the previous microwave data from the literature, the present data were fitted using the usual $^2\Pi$ and $^2\Sigma$ Hamiltonians, and spectroscopic constants were obtained for the $\tilde{X}\ ^2\Sigma^+$ (000), $\tilde{A}\ ^2\Pi$ (000) and $\tilde{C}\ ^2\Pi$ (000) states of SrOD. For BaOH, the $\tilde{A}\ ^2\Pi - \tilde{X}\ ^2\Sigma^+$ transition was observed and rotationally assigned. Unfortunately, one spin component of this transition could not be calibrated since our Ti:Sapphire laser had very low output power.