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Bound-free Emission in the NaK Molecule¹ B.M. MCGEEHAN, S. ASHMAN, S.J. SWEENEY, C.M. WOLFE, J.P. HUENNEKENS, A.P. HICKMAN, Lehigh University — We are extending the analysis of the bound-free emission from the $4^3\Sigma^+$ electronic state to the $a(1)^3\Sigma^+$ repulsive state of the NaK molecule. In previous work, Burns *et al.* [J. Chem. Phys. **119** 4743–4754 (2003)] measured spectra from initial vibrational levels up to $v = 8$, determined a refined potential for the $4^3\Sigma^+$ state, and obtained relative values of the transition dipole moment function $M(R)$ in the range $R \sim 3.8 \text{ \AA}$ to 4.6 \AA . Recent measurements include data for many additional vibrational levels up to $v = 34$ of the $4^3\Sigma^+$ state. The new data provide information about $M(R)$ for larger values of R , including a region where theoretical calculations have predicted sharp structure due to an avoided crossing. Using a version of R. J. Le Roy's code BCONT that we modified, we will obtain values $M(R)$ for a larger range of R , and we will refine the inner repulsive wall of the potential for the $a(1)^3\Sigma^+$ state.

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Prefer Oral Session
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