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Further Progress in Data Acquisition and Analysis on the $A^1\Sigma^+$ and $b^3\Pi$ States of NaK THOMAS BERGEMAN[1], SUNY Stony Brook, HEATHER HARKER, AMANDA ROSS[2], Universite Lyon 1 and CNRS (UMR 5306), France, KARA RICHTER, JOSHUA JONES, CARL FAUST, JOHN HUENNEKENS[3], Lehigh Univ., Bethlehem, PA, ANDREY V. STOLYAROV[4], Lomonosov Moscow State Univ., Russia, HOUSSAM SALAMI, Rafik Hariri Univ., Meshref, Lebanon — This work is an extension of work reported at the 2014 DAMOP meeting, with additional data and a more detailed, extensive analysis. Current efforts to produce cold NaK molecules from cold atoms start with production of Feshbach resonances [1] followed by excitation to high-lying singlet or triplet states, and then one- or two-step possibly stimulated decay to v=0 of the X ground state. Efficient use of these processes requires an accurate and detailed knowledge of NaK energy level structure. To meet requirements of current applications we have constructed a model based on direct fits of experimental term values to potentials and spin-orbit coupling elements. The model is now complemented by *ab initio* calculations of the spin-orbit functions.

[1] C.-H. Wu, M. Zwierlein et al., PRL **109**, 085301 (2012).

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