Abstract Submitted
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Ultra cold $^{23}Na^{40}K$ molecules in Munich - d/D route to the ground state NaK molecule XIN-YU LUO, FRAUKE SEEELBERG, NIKOLAUS W. BUCHHEIM, ZHENKAI LU, IMMANUEL BLOCH[1], CHRISTOPH GOHLE, Max- Planck-Institut fr Quantenoptik, Hans-Kopfermann-Str. 1, 85748 Garching, Germany — Ultracold polar molecule gases are a promising quantum system to investigate strongly interacting many-body models with long-range interactions like the t-J model and explore novel phases of quantum matter such as fractional Mott insulators and supersolids. We report on the ongoing efforts to create an ultracold, polar NaK gas in Munich. Our setup features open optical access, e.g. for high-resolution imaging or optical lattices, and can reliably produce ultra cold mixtures of sodium and potassium. Recently we succeeded to produce ultracold $^{23}Na^{40}K$ molecules. To that end we transfer weakly bound Feshbach molecules to the electronic and rovibronic molecular ground state using stimulated Raman adiabatic passage. We employ the $d^3\Pi(\nu = 5, J = 1, \Omega = 1)$ as intermediate state which mixes with the $D^1\Pi$ electronic state via spin orbit interaction. The properties of the ground state such as its lifetime and polarizability are discussed.

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