Abstract Submitted
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Formation of ultracold polar ground state molecules via an optical process[1] OLIVIER DULIEU, DIMITRI BORSALINO, ANDREA ORBAN, ROMAIN VEXIAU, Laboratoire Aime Cotton, CNRS, Univ. Paris-Sud, ENS Cachan, Orsay, France, BEATRIZ LONDONO-FLOREZ, Departamento de Fisica, Universitad del Valle, Cali, Colombia, ANNE CRUBELLIER, ELIANE LUC, NADIA BOULOUFA-MAAFA, Laboratoire Aime Cotton, CNRS, Univ. Paris-Sud, ENS Cachan, Orsay, France — Based on spectroscopic studies available in the literature completed by accurate ab initio calculations for potentail energy curves, spin-orbit couplings, and transition dipole moments, we investigate several optical coherent schemes to create ultracold bosonic and fermionic ultracold polar molecules in their absolute rovibrational ground level, starting from a weakly bound level of their electronic ground state manifold. The processes rely on the existence of convenient electronically excited states allowing an efficient stimulated Raman adiabatic transfer (STIRAP) of the level population. Illustrations are given for KRb and KCs. A model for the hyperfine structure of the excited molecular states is also presented.

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