Abstract Submitted
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Continuous loading of $\nu = 0$ $^{85}Rb_2$ ultracold molecules in a crossed optical dipole trap from a magneto-optical trap[1] HENRY PASSAGEM, University of Sao Paulo, NADIA BOULOUFA-MAAFA, OLIVIER DULIEU, Laboratoire Aim Cotton, CNRS, Universit Paris-Sud, LUIS MARCASSA, University of Sao Paulo — The development of cooling and trapping techniques for diatomic polar molecules have been motivated by their wide range of potential applications, which are associated with their long-range dipole-dipole interaction and complex internal structure. Although, such applications are all very exciting, the production of a cold and dense molecular sample is still very challenging. Its main difficult is that laser cooling cant be applied directly to any molecules since there is no close transitions, like in atomic systems. In this work, we have developed a technique to continuously load $\nu = 0$ $^{85}Rb_2$ ultracold molecules into a crossed optical dipole trap from a standard magneto optical trap using a single light beam. Such beam is composed of a single frequency coherent light source, which is responsible for short range PA of cold rubidium atoms, and an incoherent broadband light source which transfers the molecules in different vibrational levels (ν_x) of the singlet-ground-state X, into $\nu = 0$, through optical pumping. The molecules can be observed by REMPI technique. The molecular trap lifetime was measured and we believe in present conditions is limited by on resonance photon scattering from the ODT. This technique maybe applied to different atomic systems as well.

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