

Abstract Submitted
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Engineering trapping potentials for ultracold polar molecules¹

SVETLANA KOTOCHIGOVA, Temple University — We study the dynamic polarizability (Stark shift) of ultracold polar molecules due to the combined effect of a trapping laser and an external electric field. We found that the polarizability depends on the relative orientation of these fields. In fact, the relative orientation can influence the geometry of the trapping potential and thus collisional properties of the molecules. Moreover, at a particular orientation, a so called “magic angle,” the trapping potential is insensitive to the external fields. In spite of the fact that no “magic frequency” is found in the optical domain between various rotational states of a number of ground state polar molecules at zero electric field, there exist “magic electric field” values, where the Stark shifts can be made equal.

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