

Abstract Submitted
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Giant formation rates of ultracold molecules via Feshbach optimized photoassociation¹ PHILIPPE PELLEGRINI, MARK GACESA, ROBIN CÔTÉ, University of Connecticut, Physics Department — Since their first experimental realization, ultracold molecules have attracted a lot of attention due to their broad potential applications in metrology, high precision spectroscopy or quantum computing. However, even if the ability to produce and control ultracold molecules has improved drastically over the last decade, forming stable molecules in their ground lowest vibrational levels is still a difficult proposition. Here we present a theoretical investigation of the photoassociation of atoms in the vicinity of a Feshbach resonance for the production of ultracold stable molecules. We show that large molecular formation rates can be obtained, with enhancement of several orders of magnitude over off-resonance cases. Example with both homonuclear and heteronuclear dimers will be given. Future possible applications will be discussed as well.

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