

Abstract Submitted  
for the MAS16 Meeting of  
The American Physical Society

**Harmonic spectral modulation of an optical frequency comb to control the formation of ultracold molecules** GENGYUAN LIU, SVETLANA MALINOVSKAYA, Stevens Institute of Technology — A method for creation of ultracold molecules by stepwise adiabatic passage from the Feshbach state to the fundamentally ground state using an optical frequency comb is presented within a semiclassical multilevel model. The sine modulation of the spectral phase of the comb leads to the creation of a quasi-dark dressed state. An insignificant population of the excited state manifold in this dark state provides an efficient way of mitigating decoherence in the system. In contrast, the cosine modulation does not lead to the quasi-dark state formation. The results demonstrate the importance of the parity of the spectral chirp in quantum control.

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Date submitted: 05 Oct 2016

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