

Abstract Submitted  
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**Feshbach to ultracold molecular state Raman transitions in a seven-level system using optical frequency combs**<sup>1</sup> GENGYUAN LIU, SVETLANA MALINOVSKAYA, Stevens Institute of Technology — A method for creation of molecules in the ultracold state from the Feshbach molecules by stepwise adiabatic passage using an optical frequency comb is investigated in the framework of a semiclassical seven-level system. Sinusoidal modulation across an individual pulse in the pulse train is applied that leads to a creation of a quasi-dark state minimizing population of the transitional, vibrational state manifold and efficiently mitigating decoherence in the system. The parity of the temporal chirp shown to be an important factor in designing population dynamics in the system.

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