## Abstract Submitted for the DPP07 Meeting of The American Physical Society

Driven, three-oscillator interactions<sup>1</sup> autoresonant ODED YAAKOBI, LAZAR FRIEDLAND, Hebrew University of Jerusalem, ZO-HAR HENIS, Soreq Research Center — An efficient control scheme of resonant three-oscillator interactions (R3OI) using an external chirped frequency drive is suggested. The approach is based on formation of a double phase-locked (autoresonant) state in the system, as the driving oscillation passes the linear resonance with one of the interacting oscillators. When doubly phase-locked, the amplitudes of the oscillators increase with time in proportion to the driving frequency deviation from the linear resonance. The stability of this phase-locked state, the effects of dissipation and of the initial three-oscillator frequency mismatch on the autoresonance are analyzed. The associated autoresonance threshold phenomenon on the driving amplitude is also discussed. In contrast to other nonlinear systems, driven, autoresonant three-oscillator excitations are independent of the sign of the driving frequency chirp rate.

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