

Abstract Submitted  
for the MAR11 Meeting of  
The American Physical Society

**Dynamical Freezing of Response in Driven Many-Body Quantum System** ARNAB DAS, Theoretical Division (T-4), Los Alamos National Laboratory, MS-B213, Los Alamos, NM 87545 — We show, that the response of a periodically driven quantum many-body system may freeze drastically, when driven with certain combinations of driving parameters (amplitude and frequency). We demonstrate this effect with analytical results for a broad class of integrable quantum spin models (illustrated particularly for one-dimensional Transverse Ising Model) and direct numerical integration data for large system-size. We show that the immunity of the freezing behavior to external noise can be controlled arbitrarily by controlling the strength of the local (on-site) field.

Arnab Das  
Theoretical Division (T-4), Los Alamos National Laboratory,  
MS-B213, Los Alamos, NM 87545

Date submitted: 03 Jan 2011

Electronic form version 1.4