1079-35-281 **Vita Borovyk*** (vita.borovyk@uc.edu) and **Michael Goldberg**. *Dispersive Estimates in Harmonic Lattice Systems in dimension 2.*

We consider infinite-volume quantum lattice systems and study the decay of the commutators of observables with time-dependent supports in the large-time regime. For simplicity, we assume that one observable is supported at the origin, while the other one is moving, and study the dependence of the decay rate of the commutator on the velocity of the moving observable. Specifically, we investigate the relation between that velocity and the degeneracy of the corresponding phase function using a representation of the commutator in terms of oscillatory integrals. An asymptotic analysis of these integrals yields a classification of velocities according to the dispersion rates they produce. In particular, we show that in dimension 2 there exists a unique velocity (up to mirror symmetries) that produces a minimal dispersion rate of the order $|t|^{-3/4}$. (Received January 16, 2012)