1075-35-21 **M Burak Erdoğan** and **William R Green*** (wrgreen2@eiu.edu), 600 Lincoln Ave., Charleston, IL 61920. *Dispersive estimates for Schrödinger operators in dimension two with obstructions at zero energy.*

Consider the Schrödinger operator $H = -\Delta + V$ on $\mathbb{R}^2$ and $P_{ac}(H)$ the projection onto the absolutely continuous spectrum of H. When $V = 0$, the evolution of the solution operator satisfies $\|e^{itH}\|_{1\to\infty} \lesssim |t|^{-1}$. We prove dispersive, $L^1(\mathbb{R}^2) \to L^\infty(\mathbb{R}^2)$, estimates for the evolution $e^{itH}P_{ac}(H)$ when there are obstructions, resonances and/or an eigenvalue of H at zero energy. The obstructions are related to distributional solutions to the equation $H\psi = 0$. The obstructions are characterized by the values of p for which $\psi \in L^p(\mathbb{R}^2)$.

In particular, we show that the existence of an 's-wave' resonance of H at zero energy does not destroy the t^{-1} decay rate. We also show that the existence of a 'p-wave' resonance or eigenvalue at zero energy destroys the decay rate, but does lead to a bounded evolution. (Received August 23, 2011)