1086-81-2528 **Angelica Rae Deibel*** (adeibel@asu.edu), **Kevin Schwenkler**, **Laura Veith** and **Yevgeniy Kovchegov**. *Time-Inhomogeneous Quantum Walks.*

Quantum walks, the quantum analog to classical random walks, are expected to be of great use in quantum computing applications, but thus far only the simplest examples have been thoroughly studied. A quantum walk can be completely described by a system of recurrence relations; the amplitude of the particle present at location n at time t depends on the amplitudes present at locations $n-1$ and $n+1$ at time $t-1$. This system of recurrence relations can be equivalently represented by a matrix called a coin operator. Most is known about homogeneous quantum walks, whose coin operators are constant with respect to both spatial and temporal variables. We study time-inhomogeneous quantum walks, whose coin operators are time-dependent. We solve the resulting system of recurrence relations numerically, and analytically where possible, to obtain a description of the evolution and asymptotic behavior of the time-inhomogeneous quantum walk. (Received September 25, 2012)