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Kevin Schwenkler* (kas09@hampshire.edu), **Angelica Deibel** (angelica.deibel@gmail.com), **Laura Veith** and **Yevgeniy Kovchegov**. *Inhomogeneous Quantum Walks*. Preliminary report.

We examined three different types of one-dimensional quantumwalks, all exhibit some degree of inhomogeneity. The first is inhomogeneous only insofar as the coin operator differs at even and odd positions along the line. The second has a coin operator that is inhomogeneous and oscillatory in time. The third has a coin operator that is inhomogeneous and oscillatory in space, differing at every position along the line. Much progress is made towards attaining asymptotics for the first walk, although our analytical solution does not yet agree with the numerics. An asymptotic approach is attempted for the second walk, although it seems that this approach may not be well-suited to the walk. The third walk, it seems, requires more machinery, although progress is made using symmetry and a pentadiagonal transition operator is obtained. This general pentadiagonal operator gives hope for much progress in the near future. (Received September 24, 2012)