1030-05-155   **Andrew Bressler*** (`andrewbr@math.upenn.edu`), Department of Mathematics, University of Pennsylvania, 209 S. 33rd Street, Philadelphia, PA 19104-6395. *Quantum random walks in one dimension via generating functions.*

In my talk I will present a paper which is joint work with my advisor, Robin Pemantle. In the paper we analyze nearest neighbor one-dimensional quantum random walks with arbitrary unitary coin-flip matrices. Using a multivariate generating function analysis we give a simplified proof of a known phenomenon, namely that the walk has linear speed rather than the diffusive behavior observed in classical random walks. We also obtain exact formulae for the leading asymptotic term of the wave function and the location probabilities. (Received July 31, 2007)