1041-05-114 **Torin Greenwood*** (toringr@sas.upenn.edu), c/o Robin Pemantle, Department of Mathematics, 209 South 33rd Street, Philadelphia, PA 19104, and **Robin Pemantle** (pemantle@math.upenn.edu), 209 South 33rd Street, Philadelphia, PA 19104. *One-dimensional quantum random walk with more than two chiralities.* Preliminary report.

The best studied quantum random walk is the one-dimensional Hadamard QRW. Its motion is ballistic, spreading over a region that scales linearly with time. Within this region, the intensity profile is U-shaped, blowing up as the -1/2 power of the distance to either endpoint. Every nondegenerate one-dimensional QRW with two chiralities has the same qualitative limit shape.

When the number of chiralities exceeds two, the shape changes unpredictably. N. Konno was the first to find a bound state. The intensity profile may have a greater number of singluarities. In this talk, we present pictures and theorems about the number and location of these singularities in the intensity profile. (Received August 06, 2008)