1067-41-298   **Jonathan M Borwein***, School of Math and Phys Sciences, University of Newcastle, Callaghan, NSW 2308, Australia, and **Armin Straub**, **James Wan** and **Wadim Zudilin**. *Densities of short uniform random walks.*

I present recent results on the densities, p_n, of n-step random uniform random walks in the plane. For $n \geq 7$ asymptotic formulas first developed by Raleigh are largely sufficient to describe the density. For $2 \leq n \leq 6$ this is far from true, as first investigated by Pearson. I shall give remarkable new hypergeometric closed forms for p_3, p_4 and precise analytic information for larger n.

This is joint work with Armin Straub, James Wan and Wadim Zudilin. (Received August 17, 2010)