Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Metal-insulator transition in 2D quantum walks[1] JONATHAN EDGE, Nordita, JANOS ASBOTH, MTA Wigner FK SZFKI — We investigate the localisation properties due to disorder of several different two-dimensional quantum walks. We find that, contrary to claims in the literature, the Hadamard quantum walk does not localise. In a different quantum walk system we find a way to induce localisation. By tuning the parameters of the system we further manage to drive the quantum walk through a metal-insulator transition and show that the transition is related to the plateau transition of the integer quantum Hall effect.

[1]Hungarian National Office for Research

Jonathan Edge
Nordita

Date submitted: 13 Nov 2014 Electronic form version 1.4