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**Nathaniel Johnston** and **Steve Kirkland\***, Department of Mathematics, University of Manitoba, Winnipeg, MB R3T 2N2, Canada, and **Sarah Plosker**, **Rebecca Storey** and **Xiaohong Zhang**. *Hadamard Diagonalizable Graphs and Perfect State Transfer*. Preliminary report.

Let  $G$  be a graph on vertices  $1, \dots, n$  with Laplacian matrix  $L$ . We say that there is perfect state transfer (PST) from vertex  $j$  to vertex  $k$  at time  $t_0$  if the  $(j, k)$  entry of  $\exp(it_0L)$  has modulus 1. The interest in PST arises in connection with the transfer of information within a quantum computer. In this talk we focus on graphs whose Laplacian matrix is diagonalized by a Hadamard matrix. We provide a simple characterization for such graphs to have PST at time  $\pi/2$ , and produce a wide variety of new graphs that exhibit PST. (Received February 16, 2017)