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Columbia, SC 29212. *Tiling the  $n$ -cube Graph with Copies of a Given Graph*. Preliminary report.

We say that a graph  $G$  tiles the  $n$ -cube graph  $Q_n$  if  $V(Q_n)$  can be partitioned into blocks  $V_1, V_2, \dots$  so that for all  $i$ , the induced subgraph on  $V_i$  is isomorphic to  $G$ . We then propose this graph packing problem: For which graphs  $G$  does there exist an  $n$  such that  $G$  tiles  $Q_n$ ? Easily, when  $G$  tiles  $Q_n$ , it tiles  $Q_{n'}$  for all  $n' > n$ , so a more precise question is to determine the minimum value of  $n$ , denote it  $t(G)$ , such that  $G$  tiles  $Q_n$ . While these general questions remain open, we have several results to share, using techniques that include linear algebra, coding theory, and matching theory. This is joint work with Kevin Milans, David Offner, and David Stoner. (Received July 29, 2014)