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Chenxiao Xue* (chxue@davidson.edu) and **Carl Yerger** (cayerger@davidson.edu). *Optimal Pebbling on Grids*. Preliminary report.

Given a configuration of pebbles on the vertices of a connected graph G , a *pebbling move* is defined as the removal of two pebbles from some vertex and the placement of one of these on an adjacent vertex. The *pebbling number* of a graph G is the smallest integer k such that for each vertex v and each configuration of k pebbles on G there is a sequence of pebbling moves that places at least one pebble on v . The *optimal pebbling number* of G , denoted $\Pi_{OPT}(G)$, is the least k such that some particular distribution of k pebbles is solvable. In this paper, we strengthen a result of Bunde et al. relating to the optimal pebbling number of the 2 by n square grid by describing all possible optimal configurations. We find the optimal pebbling number for the 3 by n grid and related structures. Finally, we give a bound for the analogue of this question for the infinite square grid. (Received August 12, 2014)