1078-05-414 **Laura Florentina Florescu*** (lara.florescu@gmail.com), PO BOX 1663 D466, Los Alamos, NM 87545. *New connections between the Abelian sandpile model and domino tilings.* Preliminary report.

We examine the connections between the abelian sandpile model and domino tilling. Several original theorems on grid graphs with Klein Four group symmetry are presented, relating the number of symmetric recurrent configurations on grid graphs to the number of domino tilings on different checkerboards. A new proof for the number of tilings on a checkerboard is presented, as well as a partial new proof for the number of tilings on a Möbius checkerboard. We also present a number of other theorems concerning specific graphs, as well as recurrent configurations on grid graphs without symmetry. In exploring grid graphs with dihedral symmetry we find a relation between the number of symmetric configurations and weighted domino tilings on a class of graphs studied in Pachter (1997). Future work involves finding the complete new proof for the number of tilings on a Möbius checkerboard, as well as investigating a group law for the tilings arising from different configurations, inspired by the rotor-router model proposed by Holroyd et al. (Received December 14, 2011)