1127-05-383 **Arthur L. Gershon*** (arthur.gershon@case.edu). *Counting StArrs: Enumerating the Number of Aligned Strip Arrangements on Rectangular Regions in the Square Lattice.*

We generalize the classical problem of counting the number of ways to place non-overlapping 1×2 strips (commonly called *dominoes* or *dimers*) on rectangular regions in the square lattice, or *chessboards*. We consider instead placements of $1 \times k$ strips of any positive integer length k, and we also take into account how the strips are aligned within the chessboard. These generalized arrangements are what we call *aligned strip arrangements, or aligned StArrs*. StArrs correspond to models of bonds among particles, and thus their study (and enumeration) is of a broad scientific interest. Using the transfer matrix method, we prove a general formula allowing one to compute generating functions for various aligned StArr families on chessboards of fixed width. We apply this general method to StArrs that are *restricted* to at most one horizontal strip in each row and at most one vertical strip in each column. Such StArrs correspond to eight-vertex models of statistical physics, and are therefore of particular interest. The structure of the transfer matrices in this case allows us to compute not only generating functions for certain widths, but corresponding exact formulas, and hence an asymptotic formula for all fixed widths. (Received February 07, 2017)