L-Tromino Tilings for Portions of Square Lattice

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Domino tiling problem for (m, n)-grid was solved by Kasteleyn, Temperley and Fisher in 1961. L-tromino is a 2x2 rectangle without one cell. We consider the L-tromino tilings problem for (m,n)- grid when mn is not divisible by 3. We show that the alternative sums of the first row of the L-tromino tilings matrix vanish if $mn \equiv 2 \pmod 3$, and similar relation holds for the second row of the L-tromino tiling matrix if $mn \equiv 1 \pmod 3$. As an application of this result, we obtain that the number of L-tromino tilings for (m, 7)-grid without (2, 4)-cell is two times more than the similar number for (m, 7)-grid without (2, 3)-cell.

Awards Won:
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