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ALTERNATING SIGN ARRAYS AND LITTLEWOOD-TYPE IDENTITIES

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Alternating Sign Matrices were introduced in the 1980s. They are notorious for being difficult to enumerate, which is also reflected by the fact that the first proof of their counting formula was given in an 84-pages paper more than a decade after it was conjectured. Moreover, there are two classes of plane partitions that are equinumerous with alternating sign matrices, but it is a mystery that there is no satisfying explanation for these results so far, for instance in the form of transparent bijections.

I will start with an account of the history and then talk about recent developments including the discovery of alternating sign triangles that are also equinumerous with alternating sign matrices. We will see that in the algebraic proof of such results a Littlewood-type identity plays an important role, which is exciting since the classical Littlewood identity has a bijective proof that is based on the famous Robinson-Schensted-Knuth (RSK) correspondence, which I will discuss as well.