

ABSTRACT. Mills, Robbins, and Rumsey conjectured, and Zeilberger proved, that the number of alternating sign matrices of order n equals

$$A(n) := \frac{1!4!7! \cdots (3n-2)!}{n!(n+1)! \cdots (2n-1)!}.$$

Mills, Robbins, and Rumsey also made the stronger conjecture that the number of such matrices whose (unique) '1' of the first row is at the r^{th} column equals

$$A(n) \frac{\binom{n+r-2}{n-1} \binom{2n-1-r}{n-1}}{\binom{3n-2}{n-1}}.$$

Standing on the shoulders of A. G. Izergin, V. E. Korepin, and G. Kuperberg, and using in addition orthogonal polynomials and q -calculus, this stronger conjecture is proved.