

Block characters of the symmetric groups

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Block character of a finite symmetric group is a positive definite function which depends only on the number of cycles in permutation. We describe the cone of block characters by identifying its extreme rays, and find relations of the characters to descent representations and the coinvariant algebra of Sym_n . The decomposition of extreme block characters into the sum of characters of irreducible representations gives rise to certain limit shape theorems for random Young diagrams. We also study counterparts of the block characters for the infinite symmetric group Sym_∞ , along with their connection to the Thoma characters of the infinite linear group $GL_\infty(q)$ over a Galois field.