

Riesz distributions and the Wallach set in Dunkl theory

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Abstract: We introduce Riesz distributions associated with rational Dunkl operators of type A, which are closely related to the well-known Riesz distributions on symmetric cones, such as cones of positive-definite matrices. The study of these distributions relies on the rigorous foundation of a suitable Laplace transform in the Dunkl setting, which goes back to Macdonald but had been established so far only on a formal level. In particular, we shall present an analogue of a famous result of Gindikin for symmetric cones, which states that a Riesz distribution is actually a positive measure if and only if its index belongs to the so-called Wallach set. Besides the Laplace transform, Jack polynomial expansions play an important role in the proofs.