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Equivariant Hilbert Series of Subspace Arrangements. Preliminary report.

To an hyperplane arrangement we can associate a combinatorial object, a matroid. Similarly, to a subspace arrangement we associate a polymatroid. Each subspace in the arrangement can be viewed algebraically as a linear ideal and we can study the product ideal associated to the subspace arrangement using the combinatorial data of the polymatroid. The structure of an equivariant resolution of the product ideal is determined recursively using the polymatroid. The transpose functor on the category of polynomial representations acts on the equivariant Hilbert series as the involution that maps the Schur symmetric function s_λ to $s_{\lambda'}$ allowing us to determine the structure of an equivariant resolution of the wedge product ideal in the exterior algebra. Given recent developments in the study of product ideals using the integer points of an associated polytope to the polymatroid, we propose to investigate the connection between this other combinatorial point of view to the representation-theoretical one. (Received September 21, 2021)