Title: The decomposable numerical range of derivations

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Abstract: Let $1 \le k \le n$ be positive integers, G be a subgroup of the symmetric group of order k and χ be an irreducible character of G. The kth generalized numerical range of $A \in \mathbb{C}^{n \times n}$ associated with G and χ is defined by

$$W_{\chi}^{G}(A) = \left\{ d_{\chi}^{G}(V^*AV) : V \in \mathbb{C}^{n \times k}, \ V^*V = I_k \right\},\$$

where d_{χ}^{G} is the generalized matrix function associated with G and χ . It is closely related to the decomposable numerical range of derivations. When k = 1, it reduces to the classical numerical range of A. In the talk, we shall discuss the geometric properties of $W_{\chi}^{G}(A)$ such as the convexity and star-shapedness.