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**Matroid Generating Polynomials and the Half-Plane
Property**

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Abstract A homogeneous multivariate polynomial $P(x)$ with complex coefficients is said to have the half-plane property if $P(x) \neq 0$ for any x with $\operatorname{Re}(x_i) > 0$ for all i . In this paper we showed that if the generating polynomial for a set system \mathcal{S} with all sets of the same size has the half-plane property, then \mathcal{S} is the set of bases of a matroid \mathcal{M} . We also showed that this property holds in a more general case.