



Critical Points and Resonance of Hyperplane Arrangements

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Abstract. If Φ_λ is a master function corresponding to a hyperplane arrangement \mathcal{A} and a collection of weights λ , we investigate the relationship between the critical set of Φ_λ , the variety defined by the vanishing of the one-form $\omega_\lambda = d \log \Phi_\lambda$, and the resonance of λ . For arrangements satisfying certain conditions, we show that if λ is resonant in dimension p , then the critical set of Φ_λ has codimension at most p . These include all free arrangements and all rank 3 arrangements.

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