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A Projective Analogue of Wermer's Theorem

Let $K \subset \mathbf{P}^n$ be a compact subset of complex projective n -space. The *projective hull* of K is the set \widehat{K} of points $x \in \mathbf{P}^n$ for which there is a constant $C = C(x)$ with

$$\|\sigma(x)\| \leq C^d \sup_K \|\sigma\| \quad (1)$$

for all holomorphic sections σ of the line bundle $\mathcal{O}(d)$ and all $d > 0$. For $K \subset \mathbf{C}^n \subset \mathbf{P}^n$ the set $\widehat{K} \cap \mathbf{C}^n$ can also be defined using the Lelong class of plurisubharmonic functions of minimal growth. The set K is called *stable* if the best constant function C from (1) is bounded on \widehat{K} .

We prove that *if $\gamma \subset \mathbf{P}^n$ is a stable real analytic curve (not necessarily connected), then $\widehat{\gamma}$ is a 1-dimensional complex analytic subvariety of $\mathbf{P}^n - \gamma$.*