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Certain Characterizations of Carathéodory Domains

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Abstract. Let G be a simply connected, bounded domain on the plane with the boundary Γ and let $P(\Gamma)$ be a uniform closure of polynomials on Γ . It is shown that the Rudin-Carleson Theorem about analytic extensions from zero measure boundary sets is valid for $P(\Gamma)$ if and only if G is a Carathéodory domain and \overline{G} does not separate the plane. These conditions are also equivalent to maximality of $P(\Gamma)$ in $C(\Gamma)$.

Keywords. Caratheodory domains, harmonic measure, polynomial approximation, peak sets, interpolation sets, maximal subalgebras.

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