ESTIMATES FOR THE MAXIMAL CAUCHY INTEGRAL ON CHORD-ARC CURVES

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Abstract. Girela-Sarrión has recently studied the problem of estimating the maximal Cauchy transform in terms of the Cauchy transform itself in the context of smooth Jordan curves or Lipschitz graphs. If T denotes the Cauchy transform, T_* the maximal Cauchy transform and M the Hardy-Littlewood maximal operator with respect to the arc-length measure, one wants to understand under what conditions the Cotlar-type inequality $T_*(f) \leq M^2(Tf)$ holds, M^2 being the iteration of M. Girela-Sarrión showed that the previous inequality fails in the presence of an angle and gave a sufficient condition for its validity in terms of the smoothness of the curve. In this talk we discuss, under the background assumption of asymptotic quasi-conformality, a characterization of the curves such that the aforementioned inequality holds. We also provide an example of a curve which presents a critical behavior.

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