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A Sufficient Criterion to Determine Planar Self-Cheeger Sets

We prove a sufficient criterion to determine if a planar set Ω minimizes the prescribed curvature functional $\mathcal{F}_\kappa[E] := P(E) - \kappa|E|$ amongst $E \subset \Omega$. As a special case, we derive a sufficient criterion to determine if Ω is a self-Cheeger set, i.e. if it minimizes the ratio $P(E)/|E|$ among all of its subsets. As a side effect we provide a way to build self-Cheeger sets.

Keywords: Cheeger constant, inner Cheeger formula, self-Cheeger sets, perimeter minimizer, prescribed mean curvature.

MSC: 49Q10; 35J93, 49Q20.