On a singular Liouville-type equation
and the Alexandrov isoperimetric inequality

DANIELE BARTOLUCCI AND DANIELE CASTORINA

Abstract. We obtain a generalized version of an inequality, first derived by C. Bandle in the analytic setting, for weak subsolutions of a singular Liouville-type equation. As an application we obtain a new proof of the Alexandrov isoperimetric inequality on singular abstract surfaces. Interestingly enough, motivated by this geometric problem, we obtain a seemingly new characterization of local metrics on Alexandrov's surfaces of bounded curvature. At least to our knowledge, the characterization of the equality case in the isoperimetric inequality in such a weak framework is new as well.