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On the isolated singularities of a class of subharmonic functions

We extend a classical result proved by Nitsche in 1957 about the isolated singularities of the solutions of the Liouville equation $\Delta u = 4e^{2u}$ to solutions of the Gaussian curvature equation $\Delta u = -4\kappa(z)e^{2u}$ where κ is a strictly negative Hölder continuous function. This yields growth and regularity theorems for strictly negatively curved conformal Riemannian metrics close to their singular points which complement the corresponding existence-and-uniqueness results due to Heins, Troyanov, McOwen and others.

Joint work with Daniela Kraus.