Ann. Scuola Norm. Sup. Pisa Cl. Sci. (5)
Vol. X (2011), 561-609

Regularity of the singular set for Mumford-Shah minimizers in $\mathbb{R}^3$ near a minimal cone

ANTOINE LEMENANT

Abstract. We prove that if (u, K) is a minimizer of the Mumford-Shah functional in an open set Ω of $\mathbb{R}^3$, and if $x \in K$ and $r > 0$ are such that K is close enough to a minimal cone of type $\mathbb{P}$ (a plane), $\mathbb{Y}$ (three half planes meeting at x with 120° angles) or $\mathbb{T}$ (cone over the 6 edges of a regular tetrahedron centered at x) in terms of Hausdorff distance in $B(x, r)$, then K is $C^{1,\alpha}$ equivalent to the minimal cone in $B(x, cr)$ where $c < 1$ is a universal constant.

Mathematics Subject Classification (2010): 49Q20 (primary); 49Q05 (secondary).