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Perimeter, Mumford-Shah functionals, and doubling metric measures. (English)

[Zbl 1115.49034](#)

Birindelli, Isabeau (ed.) et al., Proceedings of the workshop on second order subelliptic equations and applications, Cortona, Italy, June 16–22, 2003. Potenza: Università degli Studi della Basilicata, Dipartimento di Matematica, S.I.M. Lecture Notes of Seminario Interdisciplinare di Matematica 3, 27–37 (2004).

The authors study the problem of existence of minima for the Mumford-Shah functional defined on weighted BV functions

$$\int_{\Omega} |\nabla u|^2 \omega^{1-\frac{2}{n}} dx + \int_{S_u^{\omega}} \omega^{1-\frac{1}{n}} d\mathcal{H}^{n-1} + \int_{\Omega} |u - g|^2 dx.$$

The framework is that of weighted spaces with ω a strong A_{∞} weight (as introduced by *G. David* and *S. Semmes* [Lect. Notes Pure Appl. Math. 122, 101–111 (1990; [Zbl 0752.46014](#)])). The results of the present paper are essentially contained in the previous papers [Calc. Var. Partial Differ. Equ. 16, No. 3, 283–298 (2003; [Zbl 1025.49028](#))] and [Proc. R. Soc. Edinb., Sect. A, Math. 135, No. 1, 1–23 (2005; [Zbl 1172.26312](#))].

For the entire collection see [[Zbl 1058.00010](#)].

Reviewer: [Michele Miranda \(Ferrara\)](#)

MSC:

[49Q20](#) Variational problems in a geometric measure-theoretic setting
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strong A_{∞} weight; Mumford-Shah functional