

approximation of free discontinuity pdf

The purpose of this book is to present a global approach to these approximations using the theory of Γ -convergence and of special functions of bounded variation. The book is directed to PhD students and researchers in calculus of variations, interested in approximation problems with possible applications.

Approximation of Free-Discontinuity Problems | Andrea

Free discontinuity problems (E. De Giorgi) A free discontinuity problem is the Calculus of Variations analogue of a free boundary problem in PDEs. $\min I(u)$, where

Elliptic approximation of free-discontinuity problems

[2] Alicandro, R., Braides, A. and Shah, J., Free-discontinuity problems via functionals involving the L^1 -norm of the gradient and their approximations. *Interfaces and free boundaries* 1 (1999) 17–37.

Non-local approximation of free-discontinuity problems

FINITE-DIFFERENCE APPROXIMATIONS OF FREE-DISCONTINUITY PROBLEMS $n=1,2$, Chambolle studied the asymptotic behaviour of the discrete functionals given by $F_\epsilon(u) = \int \sum_{i,j} \chi_{ij} |u_i - u_j|^2 + \epsilon \sum_{i,j} |u_i - u_j|$ (1.5) where the energies depend on finite differences through a truncated quadratic potential with threshold energy ϵ .

QUANTITATIVE ANALYSIS OF FINITE-DIFFERENCE APPROXIMATIONS

Various types of approximations of free-discontinuity energies, in particular the Mumford-Shah functional, are given: the Ambrosio-Tortorelli approximation via elliptic functionals with an additional variable (interpreted as a damage parameter in a mechanical setting); convolution functionals (interpreted as non-local damage energies), in particular the Braides-Dal Maso approximation; and non-convex finite-difference schemes.

APPROXIMATION OF FREE-DISCONTINUITY PROBLEMS - Oxford

Approximation of free-discontinuity problems by elliptic functionals via Γ -convergence Emilio Acerbi Dipartimento di Matematica, Università di Parma

Approximation of free-discontinuity problems by elliptic

NON-LOCAL APPROXIMATION OF FREE-DISCONTINUITY PROBLEMS WITH LINEAR GROWTH Luca Lussardi and Enrico Vitali Abstract. We approximate, in the sense of Γ -convergence, free-discontinuity functionals with linear growth in the gradient by a sequence of non-local integral functionals depending on the average of the gradients on small balls.

NON-LOCAL APPROXIMATION OF FREE-DISCONTINUITY PROBLEMS

PDF | Following a notation introduced by De Giorgi, we denote by \mathcal{F} free discontinuity problems all the problems in the calculus of variations where the unknown is a pair (u, K) with K varying in a ...

(PDF) On the non-local approximation of free-discontinuity

Non-local approximation of free-discontinuity functionals with linear growth (23 measure), a purely atomic one $D_j u$ (the jump part), and a diffuse (i.e., without atoms) singular one $D_c u$ (the Cantor part).

Non-local approximation of free-discontinuity functionals

Abstract. A class of free-discontinuity problems is approximated in the sense of Γ -convergence by a sequence of non-local integral functionals. 1. Introduction.

ON THE NON-LOCAL APPROXIMATION OF FREE-DISCONTINUITY PROBLEMS

set of discontinuity points of u , the term $\int_{\mathbb{R}^n} |u^+(x) - u^-(x)| dx$ is the jump of u at the point x , and $\int_{\mathbb{R}^n} |Du| dx$ is the total variation of the so-called Cantor part of the distributional derivative of u . The main difficulty in the study of F is the presence of the term containing the discontinuities of u .

Non-local approximation of free-discontinuity functionals

We approximate functionals depending on the gradient of u and on the behaviour of u near the discontinuity points by families of non-local functionals where the gradient is replaced by finite differences. We prove pointwise convergence, Γ -convergence and a compactness result, which implies, in particular, the convergence of minima and minimizers.

Finite-difference approximation of free-discontinuity

discontinuity points. Our method for generating approximants to arbitrary discontinuous functions with a finite number of discontinuities is based on the definition of connecting tangent hyperbolic functions at each discontinuity point of the discontinuous function being considered.

A very accurate method to approximate discontinuous

Discrete approximation of a free discontinuity problem. Giovanni Bellettini Dipartimento di Matematica , ...
Discrete approximation of a free discontinuity problem ... The anisotropy introduced by the mesh in the finite element approximation of the Mumford-Shah functional.

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