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An extension of the variational formulation obtained in [1] for free energies dealing with structured deformations (SD) is proposed. SD have been introduced in [2] to give a unified macroscopic description of bodies with microstructures, dislocations, cracks, and voids. The classical model takes into account the fact that a part of the energy which, in the approximating sequences, is carried on the deformation jumps is transferred to the bulk term in the limit. Here, with the aim at incorporating and describing better the nonlinear behaviour of disarrangements in the resulting energy, a nonlocal (averaged) term due to contribution of separation and slips, is added (see [3]). The results have been obtained in collaboration with José Matias (IST Lisbon, Portugal), Marco Morandotti (Politecnico di Torino, Italy), and David Owen (CMU, Pittsburgh (PA)).

[1] R. Choksi and I. Fonseca: Bulk and interfacial energy densities for structured deformations of continua. Arch. Rational Mech. Anal., 138 (1997), 37-103. [2] G. Del Piero and D. R. Owen: Structured deformations of continua. Arch. Rational Mech. Anal. 124, (1993), 99-155. [3] G. Del Piero and D. Owen: Structured Deformations: Part Two. Quaderni dell'INdAM, Gruppo Nazionale di Fisica Matematica, no. 58 (2000), 1-62. (Received September 23, 2018)