

A. Garroni - Asymptotic analysis of a system of edge dislocations

We analyze a variational problem with topological singularities arising from the analysis of the elastic energy associated to a system of edge dislocations. We consider the core radius approach in which a neighborhood of the singularities of the strain field, corresponding to the dislocations, is removed and we study the asymptotic of the elastic energy outside the core in terms of Gamma-convergence in the logarithmic regime. The analysis presents many similarities with the study of vortices in superconductivity via the Ginzburg-Landau energy, but also some specific difficulties due to the vectorial nature of the problem.