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1003-35-1159 **Markus Grasmair*** (markus.grasmair@uibk.ac.at), Technikerstr. 25, 6020 Innsbruck, Austria, and **Otmar Scherzer** (otmar.scherzer@uibk.ac.at), Technikerstr. 25, 6020 Innsbruck, Austria.
Relaxation of non-convex singular Functionals.

We study the relaxation of integral operators $I(u) = \int_\Omega f(x, u(x), \nabla u(x))\, dx$ over a Sobolev space $W^{1,p}(\Omega; \mathbb{R}^m)$. If f satisfies certain growth and continuity conditions, then the relaxed functional $\tilde{I}$ is again an integral functional $\tilde{I}(u) = \int_\Omega Qf(x, u(x), \nabla u(x))\, dx$, where Qf denotes the quasiconvex hull of f.

We consider the more general situation, where the integrand f is singular, but its quasiconvex hull Qf still satisfies the growth condition $|Qf(x, \xi, A)| \leq C(1 + |A|^p)$. In order to obtain the same relaxation result as in the nonsingular case, we have to impose continuity conditions on f. These conditions, however, do not exclude singularities, as they are only formulated locally in every point where f is finite.

Applications to image processing and a relation to Mean Curvature Motion are given. (Received October 04, 2004)