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Francesca Agnese Prinari*, francesca.prinari@unife.it. *On the lower semicontinuity of L^∞ -functionals.*

In this talk we discuss the weak* lower semicontinuity of a (supremal) functional of the form

$$F(V, B) = \operatorname{ess\,sup}_{x \in B} f(x, DV(x))$$

where $V \in W^{1,\infty}(\Omega, \mathbb{R}^d)$, Ω is a fixed open subset of \mathbb{R}^N and $B \subset \Omega$ is open. Barron, Jensen and Wang show that, under suitable assumptions for f , the strong Morrey quasiconvexity is necessary and sufficient for the lower semicontinuity of a supremal functional. Moreover they raise the question if the strong Morrey quasiconvexity is equivalent to a weaker property referred to as weak Morrey quasiconvexity and they conjecture that this is not the case. Here we show that, under a continuity assumption on $f(\cdot, \Sigma)$, if $F(\cdot, B)$ is sequentially weakly* lower semicontinuous for every open set $B \subseteq \Omega$, then $f(x, \cdot)$ is rank-one level convex for every $x \in \Omega$. In particular every strong Morrey quasiconvex function is rank-one level convex. This result is applied to provide an example of a weak Morrey quasiconvex function which is not strong Morrey quasiconvex. Finally we discuss the L^p -approximation of a supremal functional F via Γ -convergence when f is a non negative and coercive Carathéodory function. (Received July 13, 2015)