

1035-49-78

Worku T. Bitew* (fework@temple.edu), Worku Bitew, 1805 N. Broad street, Wachman Hall, 638 Department of Mathematics, Philadelphia, PA , and **Yury Grabovsky** (yury@temple.edu), 1805 N. Broad Street, Wachman Hall, 638 Department of Mathematics, Philadelphia, PA. *A sufficient condition and higher regularity of strong local minimizers.*

This discussion is about a sufficient condition and higher order regularity of strong local minimizers in the multi-dimensional calculus of variations. We will assume uniform positivity of second variation and a new quasiconvexity condition. Then we prove a sufficiency theorem for a strong local minimizer $y \in W^{1,\infty}(\Omega; \mathbb{R}^m)$. We also assume a strong local minimizer y satisfies our sufficient conditions and prove a *global* regularity result, namely strong local minimizers satisfying our conditions have to be of class $W_{loc}^{2,2}(\Omega; \mathbb{R}^m)$. (Received September 07, 2007)