

Gårding inequalities and their impact on regularity and uniqueness

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It is well-known that minimizers of strongly quasiconvex variational integrals need not be regular nor unique. However, if a suitable Gårding type inequality is assumed for the variational integral, then both regularity and uniqueness of minimizers can be restored under natural smallness conditions on the data. In turn, the Gårding inequality turns out to always hold under an a priori C^1 regularity hypothesis on the minimizer, while its validity is not known in the general case.

In this talk, we discuss these issues and how they are naturally connected to convexity of the variational integral on the underlying Dirichlet classes. In particular, we show the local higher differentiability of an extremal in the presence of a Gårding inequality.

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