On Necessary Conditions in Calculus of Variations

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The existing theory of necessary conditions for the classical problem of calculus of variations was basically completed in the Weierstrass 1879 lectures. The result to be discussed in the talk is a new (and unexpected) second order condition for a strong minimum closely associated with the Weierstrass necessary condition. A simple example demonstrating that the new condition may work when all classical necessary conditions fail will also be presented.