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**Dean A. Carlson\*** ([dac@ams.org](mailto:dac@ams.org)), Mathematical Reviews, 416 Fourth Street, Ann Arbor, MI 48103. *Equivalent Variational Problems: Sufficient conditions for optimality*. Preliminary report.

In this presentation we consider equivalence classes of general optimization problems in an effort to investigate methods for obtaining solutions. We illustrate our ideas by considering equivalent variational problems in the calculus of variations first introduced by Carathéodory in the early part of the 20th century and further extended by the speaker and G. Leitmann through the introduction of coordinate transformations. We illustrate the utility of these ideas by giving a relatively elementary proof of the classical Weierstrass sufficiency theorem for free problems in the calculus of variations. We conclude our talk by indicating how these ideas might work for discrete time optimization problems. (Received January 17, 2007)