1043-49-200   **Dean A. Carlson*** (`dac@ams.org`), 416 Fourth Street, Ann Arbor, MI 48103. *Fields of extremals and sufficient conditions for the simplest problem of the calculus of variations in n-variables.*

In a 1967 Note, G. Leitmann observed that coordinate transformations may be used to deduce extrema (minimizers or maximizers) of integrals in the simplest problem of the calculus of variations. Subsequently, in a series of papers,starting in 2001, he revived this approach and extended it in a variety of ways. Shortly thereafter, D. A. Carlson presented an important generalization of this approach and connected it to Carathéodory's equivalent problem method. This in turn was followed by a number of joint papers addressing applications to dynamic games, multiple integrals, and other related topics.

For the simplest vector-valued variables problem of the calculus of variations, making use of the classical notion of fields of extremals, we employ Leitmann's direct method, as extended by Carlson, to present an elementary proof of Weierstrass' sufficiency theorem for strong local and global extrema. (Received August 26, 2008)