عنوان مقاله:

Differential-integral Euler-Lagrange equations

محل انتشار:

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خلاصه مقاله:

We study the calculus of variations problem in the presence of a system of differential-integral (D-I) equations. In order to identify the necessary optimality conditions for this problem, we derive the so-called D-I Euler-Lagrange equations. We also generalize this problem to other cases, such as the case of higher orders, the problem of optimal control, and we derive the so-called D-I Pontryagin equations. In special cases, these formulations lead to classical Euler-Lagrange equations. To illustrate our results, we provide simple examples and applications such as obtaining the minimumpower for an RLC circuit.

کلمات کلیدی:

Calculus of variations, Euler-Lagrange equation, Optimal con-trol problems, differential-integral equation, RLC electrical circuit