Mathematics > Optimization and Control

The power quantum calculus and variational problems

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We introduce the power difference calculus based on the operator $D_{n,q} f(t) = \frac{f(qt^n)-f(t)}{qt^n -t}$, where n is an odd positive integer and $0<q<1$. Properties of the new operator and its inverse --- the $d_{n,q}$ integral --- are proved. As an application, we consider power quantum Lagrangian systems and corresponding n,q-Euler--Lagrange equations.

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