Existence of the Unique Solution to Abstract Second Order Semilinear Integrodifferential Equations

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Abstract: In this paper, a strongly damped semilinear integrodifferential equation has been considered and reformulated as an abstract second order integrodifferential equation in a Banach space. The local existence and uniqueness of a classical solution is estabilished. The continuation of classical solution, the maximal interval of the existence and the global existence of the classical solution have been also studied. Finally an application of the established results is demonstrated.

Keywords: *analytic semigroup; second order integrodifferential equation; mild solution; classical solution; contraction mapping theorem.*

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