



# Existence and Uniqueness of a Solution to a Semilinear Partial Delay Differential Equation with an Integral Condition

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**Abstract:** In this work we consider a semilinear delay partial differential equation with an integral condition. We apply the method of semi-discretization in time, also known as the method of lines, to establish the existence and uniqueness of solutions. We also study the continuation of the solution to the maximal interval of existence. Finally we give examples to demonstrate the applications of our results.

**Keywords:** *Diffusion equation; retarded argument; weak solution; method of lines.*

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