EXISTENCE AND UNIQUENESS OF MILD SOLUTIONS FOR FRACTIONAL SEMILINEAR DIFFERENTIAL EQUATIONS

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First Author	Guswanto, Bambang Hendriya; Suzuki, Takashi;
Last Author	
Authors	Guswanto, BH; Suzuki, T;
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Abstract	In this article, we study the existence and uniqueness of a local mild solution for a class of semilinear differential equations involving the Caputo fractional time derivative of order alpha (0 < alpha < 1) and, in the linear part, a sectorial linear operator A. We put some conditions on a nonlinear term f and an initial data u(0) in terms of the fractional power of A. By applying Banach's Fixed Point Theorem, we obtain a unique local mild solution with smoothing effects, estimates, and a behavior at t close to 0. An example as an application of our results is also given.
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Author	BAMBANG HENDRIYA GUSWANTO, S.Si, M.Si, Ph.D