UNIVERSITY OF CALIFORNIA
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MESA (Mechatronics, Embedded Systems and Automation) Lab

Presents

A Research Seminar at The

Applied Fractional Calculus (AFC) Workshop Series

Date/Time/Place: 05/05/2014, 4-6PM, MESA Lab (Room 820), 4225 N. Hospital Rd., Atwater, CA 95301. T: 209-2284398

Title: The existence of solutions for a class of fractional differential equations

Abstract:

By using fixed point theorems and lower and upper solution method, the existence for a class of fractional initial value problem

$$D_{0+}^{\alpha}u(t) = f(t,u(t)),\ \ t \in (0,h), \qquad (1.1)$$

$$t^{2-\alpha}u(t)\ |_{t=0}= b_1,\quad D_{0+}^{\alpha-1}u(t)\ |_{t=0}= b_2, \qquad (1.2)$$

is discussed, where $f: C([0,h]\times R, R), D_{0+}^{\alpha}u(t)$ is the standard Riemann-Liouville fractional derivative, $1 < \alpha < 2$. Some mistakes in the literature are pointed out.

A new condition on the nonlinear term is given to guarantee the equivalence between the solution of the IVP and the fixed-point of the operator. As an application, some new existence results are obtained.

Speaker Name / Contact: Zhanbing Bai, zhanbingbai@163.com or zbai3@ucmerced.edu

Speaker's short biography (with photo):

Zhanbing Bai received his master degree from Northwestern Normal University China, 1997, and Ph.D degree from Beijing Institute of Techonology in 2005, his major is mathematics. His research interests focusd on both the theory and applications of fractional differential equations.