

# Fuzzy Differential Systems and the New Concept of Stability

V. Lakshmikantham<sup>1</sup> and S. Leela<sup>2</sup>

<sup>1</sup>*Department of Mathematical Sciences, Florida Institute of Technology,  
Melbourne, FL 32901, USA*

<sup>2</sup>*Department of Mathematics, SUNY at Geneseo, Geneseo, NY 14454, USA*

Received: February 25, 2000;    Revised: November 5, 2000

**Abstract:** The study of fuzzy differential systems is initiated and sufficient conditions, in terms of Lyapunov-like functions, are provided for the new concept of stability which unifies Lyapunov and orbital stabilities as well as includes new notions in between.

**Keywords:** *Fuzzy differential systems; new notion of stability; stability tests*

**Mathematics Subject Classification (2000):** 26E50, 34A19, 34D20, 34D99.