A Linear Non-Fragile Controller Design for a Class of 4D Nonlinear Systems with Multiple Uncertainties

Yeong-Jeu Sun[1], Cheng-Fu Huang [2], Sheng-Guan Zhang [3]

Professor, Department of Electrical Engineering[1]
Student, Department of Electrical Engineering[2,3]
I-Shou University, Kaohsiung, Taiwan

Abstract: *This paper explores the linear non-fragile controller design for a class of 4D nonlinear control systems with multiple uncertainties. Using differential-integral inequalities, a non-fragile linear controller will be proposed to achieve global exponential stability for a class of 4D nonlinear control systems with multiple uncertainties. At the same time, the exponential convergence rate of the system will also be precisely calculated. Finally, two numerical simulation examples will be provided, along with the electronic circuit implementation diagram of the proposed linear controller, to demonstrate the design flow of the main theorem and verify its correctness.*

Keywords*: multiple uncertainties, non-fragile control, nonlinear systems, linear control*

Copyright to IJARSCT
www.ijarsct.co.in

DOI: 10.48175/IJARSCT-31416

ISSN
2581-9429
IJARSCT

80