

Stability Analysis of a Distributed Delay System Modeling Cell Dynamics in Leukemia

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In this talk we will discuss stability conditions for cell dynamics in leukemia. Basic biological principles behind the mathematical model will be summarized. The overall system is a cascade connection of sub-systems consisting of distributed delays and static nonlinear feedbacks. We will first present the conditions for local asymptotic stability around the positive equilibrium. For the nonlinear system, we derive stability conditions by using Popov, circle and nonlinear small gain criteria. The results are illustrated with numerical examples and simulations.

Short Biography: Hitay Özbay is a Professor of Electrical and Electronics Engineering at Bilkent University, (Ankara, Turkey). He received the B.Sc. degree in Electrical Engineering from Middle East Technical University (Ankara, Turkey) in 1985, the M.Eng degree in Electrical Engineering from McGill University (Montreal, Canada) in 1987, and the Ph.D. degree in Control Sciences and Dynamical Systems from the University of Minnesota, (Minneapolis, USA) in 1989. Dr. Özbay was with the University of Rhode Island (1989-1990) and The Ohio State University (1991-2006), where he was a Professor of Electrical and Computer Engineering, prior to joining Bilkent University in 2002, on leave from OSU.

He served as an Associate Editor on the Editorial Board of the IEEE Transactions on Automatic Control (1997-1999), and Automatica, (2001-2007); he was a member of the Board of Governors of the IEEE Control Systems Society (1999) and a vice-chair of the IFAC Technical Committee on Networked Control Systems (2005-2011). Currently, he is an Associate Editor for SIAM Journal on Control and Optimization.