

# **Robustness Bounds For Sampled-Data Linear Time-Delay Systems**

**Al-Sunni, FM; Boukas, EK; Al-Amer, SH**

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King Fahd University of Petroleum & Minerals

**<http://www.kfupm.edu.sa>**

## **Summary**

In this paper robustness bounds for sampled-data linear time-delay systems are developed. The uncertainty is assumed to be on both the A and B matrices of the continuous-time system. The bounds developed are in terms of the maximum singular values of uncertainties in the continuous-time domain. Cases of small (less than or equal to the sampling time) and long time delays are considered. For each of the cases, the bounds are developed for the general uncertain continuous time-delay system as well as the system with uncertainty in A or B only. An example illustrating the findings of this paper is presented.

## **References:**

1. ALSUNNI FM, 1998, IEE P-CONTR THEOR AP, V145, P236
2. ASTROM KJ, 1997, COMPUTER CONTROL SYS
3. BERNSTEIN DS, 1989, SYST CONTROL LETT, V13, P217
4. BOURDON SE, 2001, IEEE T AUTOMAT CONTR, V46, P607
5. CHAPPELLAT H, 1989, IEEE T AUTOMAT CONTR, V34, P306
6. DOYLE JC, 1984, ADV MULT CONTR LECT
7. EZZINE J, 1995, INT J SYST SCI, V26, P1951
8. HU HZ, 1993, IEEE T AUTOMAT CONTR, V38, P1541
9. KOLLA SR, 1989, INT J CONTROL, V26, P713
10. YAZ E, 1988, IEEE T AUTOMAT CONTR, V33, P952
11. YEDAVALLI RK, 1990, RECENT ADV ROBUST CO

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