



**YTU** YILDIZ TEKNİK  
ÜNİVERSİTESİ

## Graduate Seminar

**Title:** Contraction Analysis in Systems and Control  
**Speaker:** Dr. Dongjun WU, Department of Automatic Control, Lund University, Sweden  
**Date:** Friday, 29.12.2023 – 11:00  
**Place:** Zoom  
**Zoom Link:** <http://online.yildiz.edu.tr/JoinMeeting?organizationid=646bebbc-56ee-42fb-84b7-9ca8d19339bf&meetingid=ae8491dd-91b5-4a58-9cb5-ecc0585da37a>

### ABSTRACT

Contraction analysis has become a popular tool in systems and control. In this talk, I will first review the basic concepts of contraction analysis, the motivation behind it and some of its important applications in control theory. Then we will recall some existing techniques for doing contraction analysis. In particular, we will see that the notion of Finsler metric plays a crucial role in contraction analysis. In the end, we will discuss how to do contraction analysis on manifolds, which is particularly useful for mechanical systems.

### BIOGRAPHY

Dongjun Wu obtained double PhD degree from Harbin Institute of Technology in China and University of Paris-Saclay in France in 2022. Since May 2022, he has been working as a postdoc researcher at Lund University in Sweden under an ERC project "Scalable Control for Large Scale Systems". His research interests include nonlinear control, contraction analysis, large scale systems and optimal transport. In particular, he is interested in introducing differential geometry to controller and observer design.

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