



Contraction Theory for Learning-Based Control of Nonlinear Systems



27-29
January 2026



Eindhoven University of
Technology, Eindhoven (NL)

This winter school will be taught by international and local experts.



Hiroyasu Tsukamoto
(Univ. Of Illinois
Urbana-Champaign)



Amritam Das
(Eindhoven
University of
Technology)



Sebastiaan
van den Eijnden
(Eindhoven
University of
Technology)

Additional local speakers
will be announced shortly!

Winter school
website/registration:
<https://sites.google.com/view/discwinterschool2026/homepage>

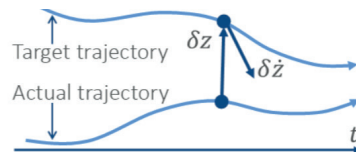


For questions about registration, contact:
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Amritam Das (TU/e),
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Contraction Theory for Learning-Based Control of Nonlinear Systems

Over the past five years, nonlinear control has advanced rapidly. New theories are changing how we analyze and design complex dynamical systems. Among them, contraction theory has become a key tool for studying stability, robustness, and performance in both deterministic and stochastic systems. By examining how nearby trajectories behave, it offers certificates that extend beyond Lyapunov methods. Meanwhile, learning-based control is growing quickly, using data to model systems and design controllers. The combination of contraction theory and learning is leading to provably stable learning architectures, paving the way for scalable and reliable nonlinear control methods with applications in modern engineering systems such as robotics, aerospace, high-precision mechatronics and renewable energy.



This winter school will explore recent advances in contraction theory and learning-based control for nonlinear systems. Participants will gain insight into the latest theoretical tools and their applications to real-world systems. The program features lectures by rising stars in the field, complemented by challenge-based problems to be solved in teams. On the final day, each team will present their results in an interactive session.

Target audience: PhD students, postdocs,
and researchers interested in the field.