

# **From vehicle dynamics control to autonomous driving in urban environments**

Centro residenziale universitario di Bertinoro, July 3-5, 2023

**Organizers and Speakers:**

**Paolo Falcone**

Dipartimento di Ingegneria “Enzo Ferrari”, Università di Modena e Reggio Emilia

**Matteo Corno**

Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano

## **Day 1 - program.** Speaker: Paolo Falcone

- 09.00 – 10.30. Course overview and learning outcomes. Vehicle modelling. Kinematic model, bicycle model.
- 10.30 – 11.00. Break
- 11.00 – 12.30. Longitudinal motion control. Speed control.
- 13.00 – 15.00. Lunch break
- 15.00 – 16.30. Lateral motion control. Path following
- 16.30 – 17.00. Break
- 17.00 – 18.30. Predictive motion planning

## **Day 2 - program.** Speaker: Matteo Corno

- 09.00 – 10.30. Vertical dynamics preliminaries: models, actuators
- 10.30 – 11.00. Break
- 11.00 – 12.30. Semi-Active Damping Control
- 13.00 – 15.00. Lunch break
- 15.00 – 16.30. Semi-Active Stiffness Control
- 16.30 – 17.00. Break
- 17.00 – 18.30. Semi-Active Stiffness Control (Cont'd)

## **Day 3 - program**

- 09.00 – 10.30. Seminar. Speaker: Paolo Falcone. Safe trajectory planning in urban environments.
- 10.30 – 11.00. Break
- 11.00 – 12.30. Seminar. Speaker: Matteo Corno. Trajectory planning at the limit of handling.