

Sergio Picella — Curriculum Vitae

 Sergio Picella  picella@amolf.nl  sergiopicella.com

I'm a PhD student in the Soft Robotic Matter Group at AMOLF and the Dynamics and Control at TU Eindhoven, with a background in Physics. **My research focuses on the control, energy and actuation autonomy of (electronics-free) soft robots.**

Publications

Published.....

- **Regulating Airflow Using Hybrid LCN for Soft Pneumatic Circuits** Kurt, E., Golestani, Y. M., Barmpoutsis, E., [Picella S.](#), Selinger, R. L. B., Overvelde, J.T.B., Liu, D. 2025
Advanced Intelligent Systems
- **Pneumatic coding blocks enable programmability of electronics-free fluidic soft robots**
[Picella S.](#), van Riet, C.M., Overvelde, J.T.B. 2024
Science Advances
- **A Retrofit Sensing Strategy for Soft Fluidic Robots**
Zou, S., [Picella S.](#), de Vries, J. Kortman, V.G., Sakes, A., Overvelde, J.T.B. 2024
Nature Communication
- **Robust Phototaxis by Harnessing Implicit Communication in Modular Soft Robotic Systems**
Schomaker, H.A.H., [Picella S.](#), Küng Garcia, A., van Laake, L.C., Overvelde, J.T.B. 2024
Advanced Functional Materials

In Preparation.....

- **Harvesting Environmental Circadian Oscillations for Energy Autonomy in Soft Robots**,
[Picella S.](#), Comoretto, A., Verkaamp, O., Overvelde, J.T.B.
- **From Marionettes to Robots: on the Design of Soft Robots**, [Picella S.](#), Overvelde, J.T.B.
- **Explicit and Implicit Coupling: Modelling and Designing Interactions between Oscillators and their Environment**, [Picella S.](#), Overvelde, J.T.B.

Demonstrators

- **SOMBRA - Kinetic Shading System @Biennale di Architettura in Venice**
in collaboration with AIRSHADE and MVRDV 2025
- **Soft Robotic Symphony - Musical demonstrator for soft robotics, electronics-free pneumatic circuits**
in collaboration with van Riet, C. M. [video] 2025
- **Electronics-free control, powering and actuation of sustainable, electronics-free shading**

- systems for façade systems** 2024-
in collaboration with AIRSHADE
- **Haptic Feedback enabled by proprioception of pneumatic gripper**
in collaboration with in collaboration with Shibo Zou (AMOLF), Femke van Beek (TU Eindhoven), Ali Sadeghi (University of Twente) 2023

Education

- **PhD in Soft Robotic Matter Group** 2021-2025
AMOLF (Amsterdam, NL) and Dynamics and Control (Eindhoven, NL)
Supervisor: *dr. ir. J.T.B. Overvelde*
- **MSc in Experimental Physics** Utrecht, NL 2019-2021
Utrecht University
Thesis: *Distributed Learning of Emergent Behaviour in 2D Robotic Matter*
Supervisors: *prof. dr. ir. Marjolein Dijkstra, dr. Laura Fillon, dr. ir. J.T.B. Overvelde*
- **BSc in Physics** Bari, IT 2013-2017
Università degli Studi di Bari "Aldo Moro"
Thesis: *Electrolyte Gated Organic Field Effect Transistor: biosensing applications*
Supervisor: *prof. Gaetano Scamarcio*

Teaching

- **Utrecht University** Utrecht, NL 2024
Guest Lecture at Master Course Introduction to Complex Systems
- **TU Eindhoven** Eindhoven, NL 2023-2024
Guest Lecture at Master Course Advanced Materials for Soft Robotics
- **University of Amsterdam** Amsterdam, NL 2023
Seminar for Advanced Matter Energy Physics (AMEP)
- **TU Eindhoven** Eindhoven, NL 2022-2024
Supervising 5 Bachelor theses
- **AMOLF** Amsterdam, NL 2022-2024
Supervising 2 Master theses

Conferences

Oral Presentations.....

- **Bodyware for autonomous façade systems** Utrecht, NL 2025
Picella, S., Overvelde, J.T.B.
Future Façade

- Energy Autonomy through thermopneumatic effects** **Lausanne, CH**
 ○ Picella, S., Verkaamp, O., Comoretto A., Overvelde, J.T.B. 2025
 Robosoft 2025
- Automatic and Autonomous systems** **Lausanne, CH**
 ○ Picella, S., Overvelde, J.T.B. 2025
 Robosoft 2025
- Proficient without Training** **Online**
 ○ Picella, S., Overvelde, J.T.B. 2025
 Embodied Intelligence 2025
- From Marionette systems to Autonomous (Soft) Robots** **Oslo, NO**
 ○ Picella, S., van Riet, C. M., Comoretto A., Verkaamp, O., Overvelde, J.T.B. 2024
 Workshop on Interplay of Fluids and Soft Materials. Invited Talk
- Endowing soft robots with counting capabilities...and more!** **Las Vegas, US**
 ○ Picella S., van Riet, C. M., Overvelde, J.T.B. 2023
 APS March Meeting
- Biosensing through Electrolyte Gated Organic Field Effect Transistors** **Rende, IT**
 ○ Scamarcio, G., Picella S. 2018
 Italian Physics Society Meeting
- Poster Presentations.....
- Thermopneumatic Energy Harvesting through circadian Oscillations** **Leuven, BE**
 ○ Picella S., Comoretto A., Verkaamp, O., Overvelde, J.T.B. 2024
 PhD Workshop
- Fluidic Coding for Soft Robots** **Eindhoven, NL**
 ○ Picella S., van Riet, C. M., Overvelde, J.T.B. 2024
 Dutch Soft Robotic Meeting
- Enabling High-level programmability in Pneumatic Soft Robots** **Ventura, US**
 ○ Picella S., van Riet, C. M., Overvelde, J.T.B. 2024
 GRS/GRC on Physically and Computationally Intelligent Behaviour in Robots
- Towards emergent behavior in modular soft robots** **Eindhoven, NL**
 ○ Picella S., Overvelde, J.T.B. 2022
 ICSM Annual Symposium
- Control Through Limit Cycles in Out-of-Equilibrium Soft Robots** **Eindhoven, NL**
 ○ Picella S., Overvelde, J.T.B. 2022
 ICSM Annual Symposium

Technical Skills

- **Languages:** English (L2), French (L2), Italian (L1)
- **Coding Languages:** Python, C, MATLAB, Mathematica Javascript, HTML
- **Fabrication:** Fabrication: Silicone Casting, Mold Design, 3D Printing

Outreach and Extra-Curricular Activities

- **Pint of Science** **Utrecht, NL**
2023-2025
○ *Event Manager (2023-2024), Communication Manager (2025)*
- **AMOLF Open Day** **Amsterdam, NL**
2023-2024
○ *Outreach*
- **Physics with Industry Workshop (PWI)** **Leiden, NL**
2022
○ *with Tata Steel RD*
- **Monitoring and classification of shallow water biomes** **Bari, IT**
2021-
○ *Independent open source project*
- **Italian Association of Physics Students (AISF)** **Bari, IT**
2019-2020
○ *Vice-president*
- **Italian Association of Physics Students (AISF)** **Bari, IT**
2018-2020
○ *National Coordinator for local committees*
- **Italian Association of Physics Students (AISF)** **Bari, IT**
2017
○ *Organising Committee for the National Meeting*
- **European Researcher Night** **Bari, IT**
2015-2019
○ *Coordinator of Outreach Activities and Volunteers*

Volunteering

- **Language Cafe** **Utrecht, NL**
2020-
○ *Host for Weekly Language Exchange Events*
- **Italian Language Tutor** **Utrecht, NL**
2020-
○ *Conversations for linguistic tandem*
- **Italian Civil Protection** **Amatrice, IT**
2016
○ *First Aid Emergency during 2016 Central Italy Earthquake Emergency*
- **Italian Civil Protection** **Bari, IT**
2014-2017
○ *Emergency service on Ambulances*