



XXIX School of Physiology and Biophysics
COMPUTATIONAL APPROACHES IN SYSTEMS NEUROPHYSIOLOGY



June 16-18, 2026

University of Rome Tor Vergata, Via Lucullo 11 (piano IV, int.10), Rome

PROGRAM

Tuesday, June 16, 2026

13:00-13:45 Opening lecture

Why we need computational approaches in systems neurophysiology – Francesco Lacquaniti

13:45-14:15 Lecture 1

Neurophysiological foundations of computational methods for investigating human locomotion –
Francesca Sylos Labini

14:15-14:45 Lecture 2

Applications of computational methods to the locomotor function of children with Cerebral Palsy –
Germana Cappellini

14:35-15:45 Tutorial 1-2

Surface electromyography to study human gait: from single muscles to spinal maps – Francesca
Sylos-Labini, Germana Cappellini, Camilla Pera, Priscilla Avaltroni

15:45-16:15 Coffee break

16:15-16:45 Lecture 3

Muscular and kinematic synergies for motor control – Andrea d'Avella

16:45-18:15 Tutorial 3

Computational methods for the identification of muscular and kinematic synergies – Andrea d'Avella,
Lucas Dal'Bello, Luca Falorsi

Wednesday, June 17, 2026

9:00-9:30 Lecture 4

The vestibular system as a computational machine – Francesco Lacquaniti

9:30-10:15 Keynote lecture 1

TBA – Alexandra Battaglia-Mayer

10:15-10:45 Coffee break

10:45-11:30 Keynote lecture 2

The physiology of cells, circuits and brains in multiscale brain models and digital twins – Egidio D'Angelo

11:30-12:00 Lecture 5

Structural and functional MRI of the vestibular system – Iole Indovina

12:00-13:30 Tutorial 5

Hands on MRI data analysis – Iole Indovina, Gianluca Paolucci

13:30-14:45 Lunch

14:45-15:30 Keynote lecture 3

Information transfer along the cortico-spinal tract: from neural oscillations in the cortex to muscle synergy formation – Andreas Daffertshofer

15:30-16:00 Lecture 6

Eye movements as a model for the study of motor control and attention – Gianfranco Bosco

16:00-16:30 Coffee break

16:30-18:00 Tutorial 6

Hands on eye tracking analysis – Gianfranco Bosco, Stefano Sacchetti

20:30-22:30 Social dinner

Thursday, June 18, 2026

09:00-09:30 Lecture 7

Introduction to data science for neuroscience and psychophysics – Alessandro Moscatelli

09:30-10:30 Lecture 8

Bayesian hierarchical models for fitting psychometric functions – Maura Mezzetti

10:00-11:00 Tutorial 7-8

The analysis of psychophysical data with R: examples from haptics – Alessandro Moscatelli, Priscilla Balestrucci

11:00-11:30 Coffee break

11:30-12:15 Keynote lecture 4

Integrating quantitative methods in neurology and neurorehabilitation: a multimodal neurophysiological approach to neurostimulation – Giacomo Koch

12:15-13:00 Closing session

Feedback from participants and closing remarks

Organizing Committee

Francesco Lacquaniti – University of Rome Tor Vergata (URTV)

Andrea d’Avella – URTV

Gianfranco Bosco – URTV

Germana Cappellini – URTV

Iole Indovina – URTV

Maura Mezzetti - URTV

Alessandro Moscatelli – URTV

Francesca Sylos-Labini – URTV

Invited Speakers

Alexandra Battaglia-Mayer – Sapienza University, Rome, Italy

Andreas Daffertshofer – Vrije Universiteit Amsterdam, The Netherlands

Egidio D’Angelo – University of Pavia, Italy

Giacomo Koch – University of Ferrara, Italy

Tutors

Priscilla Avaltroni – URTV

Priscilla Balestrucci – Fondazione Santa Lucia, IRCCS (FSL)

Lucas Dal’Bello – FSL

Luca Falorsi – FSL

Gianluca Paolucci – Università degli Studi di Messina, Italy

Camilla Pera - URTV

Stefano Sacchetti – URTV