PROGRAM: “Optical control of brain functioning with optogenetics and wave front shaping”

**Monday 8th October 2018**

9:00 h-10:00 h  *Welcome and opening remarks*
Valentina Emiliani & Eirini Papagiakoumou

10:00 h-12:00 h  *Lecture: Introduction to optogenetics and uncaging*
Guillaume Dugué, David di Gregorio

12:00 h-13:00 h  *Lecture: Opsin photo-cycle modeling (Peter Heigemann) Welcome and opening remarks*
Peter Hegemann

13:00 h-14:00 h  *Lunch*

14:00 h-15:00 h  *Lecture: Wave front shaping and liquid crystal matrix*
Emiliano Ronzitti

15:00 h-16:00 h  *Lecture: Computer generated holography*
Valentina Emiliani

16:00 h-17:00 h  *Lecture: Generalized phase contrast method*
Eirini Papagiakoumou

17:00 h-18:00 h  *Lecture: Temporal focussing*
Dan Oron

**Tuesday 9th October 2018**

9:00 h-10:00 h  *Lecture: Three dimensional light patterning and temporal focusing*
Nicolo Accanto

10:00 h-12:00 h  *Lecture: 2P optogenetics: scanning, spiral scanning, parallel illumination: examples and comparison among the different approaches*
Valentina Emiliani

12:00 h-13:00 h  *Lecture: How to build up a holographic set up*
Emiliano Ronzitti

13:00 h-14:00 h  *Lunch*

14:00 h-18:00 h  **Practical 1:** Building up an holographic microscope (E. Ronzitti, V. De Sars)

**Practical 2:** In vitro 2P patterned photostimulation (V. Zampini)

**Practical 3:** In vitro 2P functional imaging and patterned photostimulation (D. Tanese, C. Wyart)

**Wednesday 11th October 2018**

9:00 h-11:00 h  *Lecture: All optical interrogation of brain*
Claire Wyart & Eirini Papagiakoumou

11:00 h-12:00 h  *Lecture: Patterned voltage and Calcium imaging*
Dimitri Tanese
12:00 h-13:00 h  Lecture: *Viral vector design*
   Deniz Dalkara

13:00 h-14:00 h  Lunch

14:00 h-18:00 h  Practical 1: *Building up an holographic microscope* (E. Ronzitti, V. De Sars)
                     Practical 2: *In vitro 2P patterned photostimulation* (V. Zampini)
                     Practical 3: *In vitro 2P functional imaging and patterned photostimulation* (D. Tanese, C. Wyart)

**Thursday 12th October 2018**

9:00 h-11:00 h  Lecture: *Optogenetics and vision*
     Serge Picaud

11:00 h-13:00 h  Lecture: *Optogenetics and audition*
      Tobias Moser

13:00 h-14:00 h  Lunch

14:00 h-18:00 h  Practical 1: *Building up an holographic microscope* (E. Ronzitti, V. De Sars)
                     Practical 2: *In vitro 2P patterned photostimulation* (V. Zampini)
                     Practical 3: *In vitro 2P functional imaging and patterned photostimulation* (D. Tanese, C. Wyart)

**Friday 13th October 2018**

9:00 h-13:00 h  Presentation of results from practical courses

13:00 h-14:00 h  Lunch

14:00 h-18:00 h  Presentation of participants projects