**SEMINARIO / SEMINAR**

***Titolo / Title*:**
**From brain activity to functional neuronal architectures: an integrated framework to investigate circuit mechanisms**

***Quando / When*:**
28 Aprile 2022, ore 15:00 / 28th of April 2022 at 15:00 CET

***Dove / Where*:**
Online (Microsoft Teams)
https://teams.microsoft.com/l/meetup-join/19%3a0b724a844f004f47bbf9e6bfc4ccc1b8%40thread.tacv2/1650356324609?context=%7b%22Tid%22%3a%2241f8b7d0-9a21-415c-9c69-a67984f3d0de%22%2c%22Oid%22%3a%22aebf9932-2c06-4b91-862f-ae81e43ca747%22%7d

***Relatore / Speaker*:**
**Prof Marco Dal Maschio**, Department of Biomedical Sciences, University of Padua

***Abstract*:** How neuronal circuits support the integration of the sensory information to coordinate a motor outcome is still an open challenge. In zebrafish larvae, optical methods allow for the reconstruction of the activity from several thousand neurons across the entire brain in parallel, while tracking the behavioral outcome, in response to a sensory stimulation. This kind of dataset provides an ideal workbench for the application of theoretical approaches aiming at generating plausible circuit models where to test hypotheses on the circuit mechanisms, to assess the network properties and its functional organization. This approach is also taking advantage of high-resolution reconstructions of the neuronal wiring diagrams and connectomes whose layouts offer a sort of structural blueprint underlying the circuit activity. However, it's not yet clear if and to what extent the patterns extracted from the connectome reconstruction can explain the observed functional information, and vice versa. In order to disentangle the relationships between the different circuit components, everyday more refined intervention approaches allow for controlling the neuronal activity at single cell resolution in an arbitrary number of cells with targeted spatio-temporal patterns.
In the talk, I'm presenting the current state of the art and the application of these methods for the study of the brain mechanisms.