

Imaging technology, i.e. diffusion MRI and BOLD contrast MRI allows mapping simultaneously structural connectivity of the brain and the time dynamics of brain activation. This is a great opportunity to study the relationship between the organization of structural brain networks and brain activation dynamics. Despite the fact that the spatial and temporal resolution at which the neuronal processes occur are far beyond the sensitivity of our measurement method, the macroscopic measurements obtained with MRI can inform us on how brain structural organization shapes functional dynamics. During this course I will present several ways of performing such analysis. I will discuss simple correlative analysis, more sophisticated data-driven approaches as well as computational model of neural activity. I will also discuss how such approaches may be useful to investigate the pathophysiology of neuro-psychiatric diseases.