

[Bard Ermentrout](#), University of Pittsburgh (USA)

Title: Space: the final frontier spatiotemporal dynamics in neural fields

Abstract:

With the ability of experimentalists to record and stimulate with optical techniques, it is possible to determine the behavior of large numbers of neurons as well as to perturb them. In this talk, I consider the behavior of systems of integro-differential equations that arise in the modeling of local cortical areas. First I discuss some issues with the analysis and interpretation of the spatio-temporal data. Next I introduce the class of models and discuss computational and mathematical challenges associated with these nonlocal highly nonlinear systems. I will show several examples of models of the experimental phenomena and then I will describe recent work on multi-layer models as well as some interesting dynamics that is hidden in simplified discontinuous approximations.