## SM&FT 2015 - The XVI Workshop on Statistical Mechanics and nonpertubative Field Theory



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## Heterogenous mean field approach to neural networks dynamics

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We apply to neural networks dynamics on on random massive networks the hetherogeneous mean field approach which has been originally developed for epidemic and social systems. In particular we focus on leaky integrate-and-fire neurons with short-term plasticity evidencing that for large enough connectivity the method provides a good descriptoin of the full network dynamics. Then we analyze in details the dynamical phase characterized by the presence of quasisynchronous events. Finally, we prove that the hetherogeneous mean field formulation allows to solve the inverse problem of reconstructing the in-degree distribution for different network topologies from the knowledge of the global activity field.

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