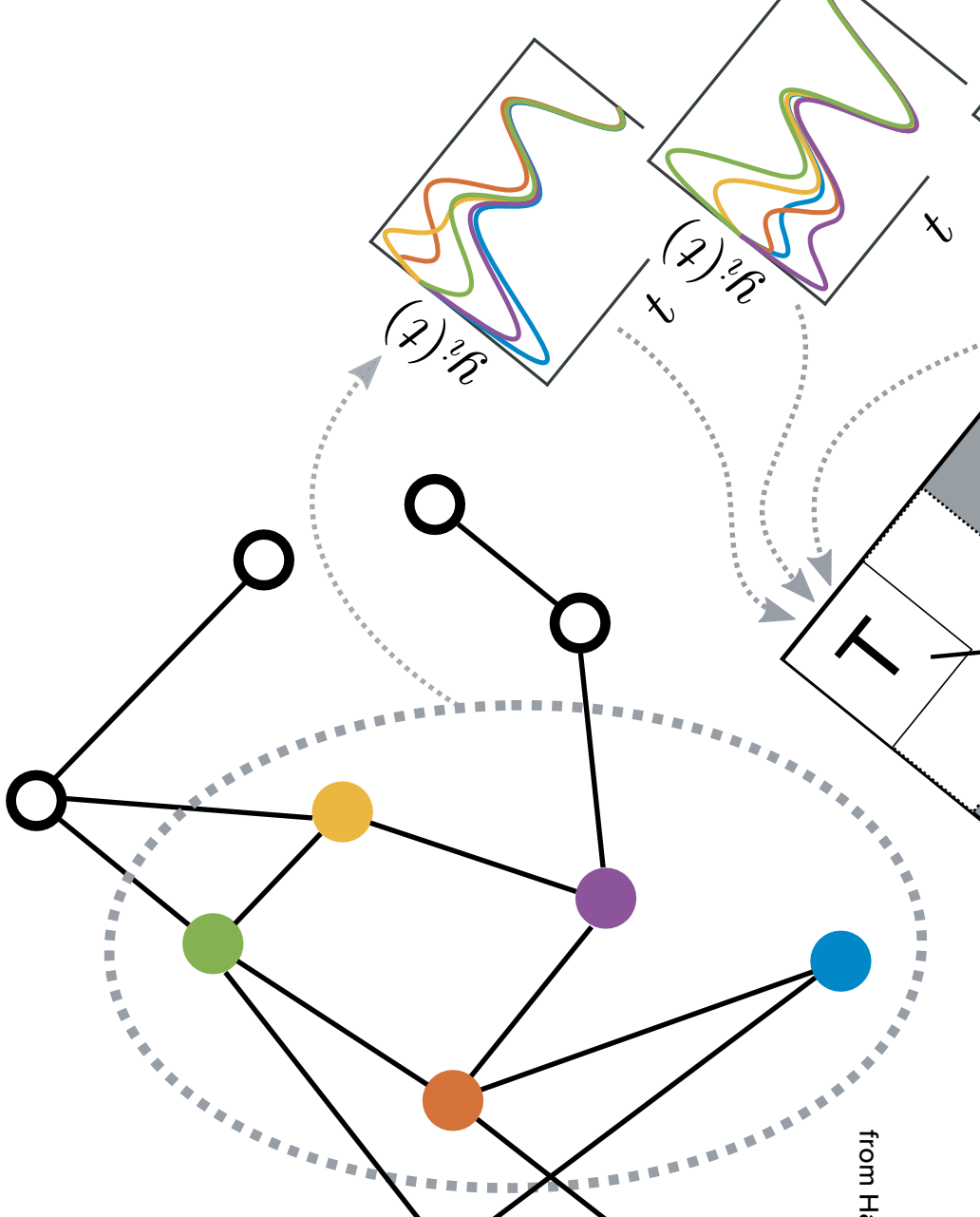
AMERICAN UNIVERSITY OF BEIRUT

CENTER FOR ADVANCED MATHEMATICAL SCIENCES

NONLINEAR DYNAMICS OF COMPLEX SYSTEMS

MULTI-DIMENSIONAL TIME SERIES, NETWORK INFERENCE AND NONEQUILIBRIUM TIPPING



from Haehne et al., Phys. Rev. Lett. 122:158301, 2019

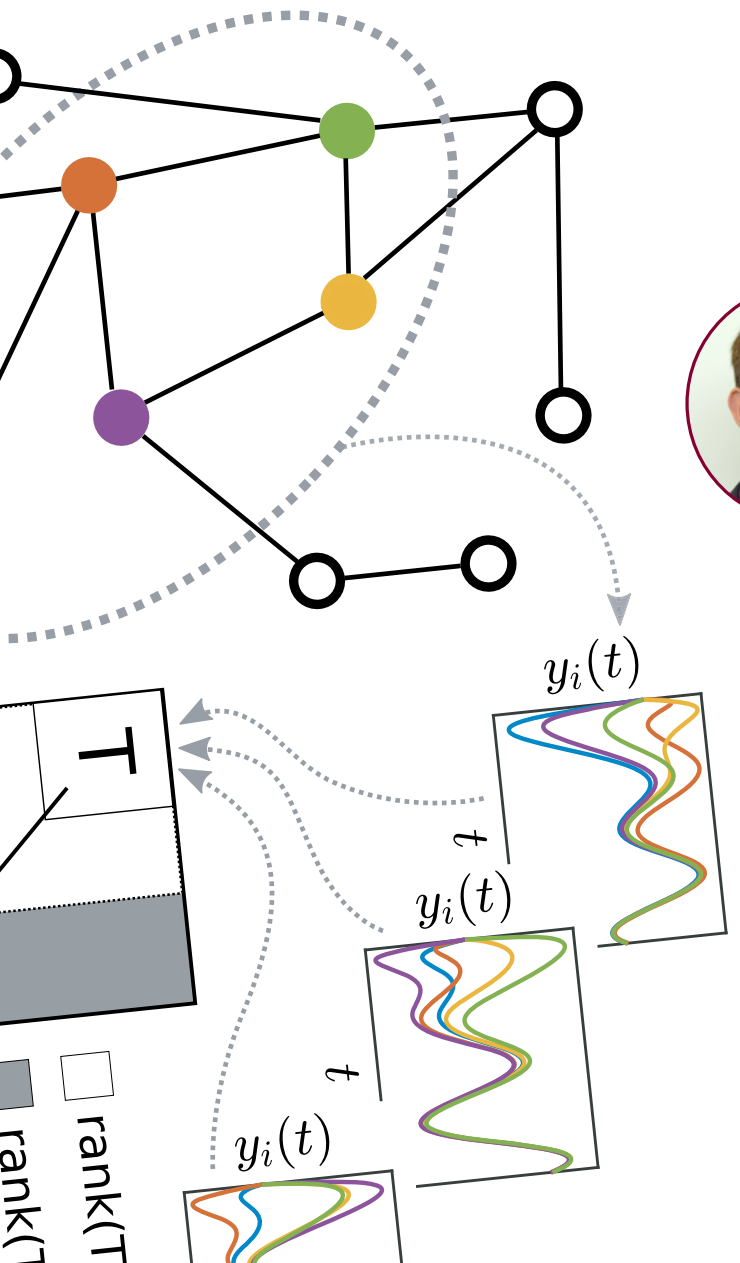
COURSE SYLLABUS

LECTURE I: Introductory Review: Networks, Nonlinear Dynamics, and Network Dynamics

LECTURE II: Infering network size from time series of recorded nodes; basics on infering topology

LECTURE III: Infering topology from time series data (continued)

LECTURE IV: Genuinely nonlinear nonequilibrium system responses and the prediction of tipping points



MARCH 9, 2023 AT 3:00 PM
MARCH 10, 14, 2023 AT 4:00 PM
MARCH 23 AT 3:00 PM

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COLLEGE HALL, AUDITORIUM B1 | ZOOM

MARC TIMME

Institute for Theoretical Physics & Center for Advancing Electronics Dresden (cfaed), TU Dresden

Marc Timme (http://networkdynamics.info) studied physics and mathematics in Würzburg (Germany), Stony Brook (USA), and Göttingen (Germany). After working as a Postdoctoral Researcher at the Max Planck Institute for Flow Research and as a Research Scholar at Cornell University, Ithaca, NY, USA, he was selected to head a broadly transdisciplinary Max Planck Research Group on Network Dynamics at the Max Planck Institute for Dynamics and Self-Organization. He held a Visiting Professorship at TU Darmstadt and was a visiting faculty at the ETH Zurich Risk Center (Switzerland). He is currently a Strategic Professor and the Head of the Chair for Network Dynamics at the Cluster of Excellence Center for Advancing Electronics Dresden (cfaed) and the Institute for Theoretical Physics, TU Dresden. He was Co-Chair of the Division of Socio-Economic Physics of the German Physical Society (DPG) from 2014-2022. Since 2018, he has been an Honorary Member of Lakeside Labs, Klagenfurt (Austria). He has also acted as a national High End Foreign Expert to China and as a Mentor for female postdocs, initiated by the Leibniz Association (Germany). His research focusses on the collective dynamics of complex systems. He develops first principles theory and integrates it with data-driven modeling to establish generic fundamental insights that drive applications of complex dynamical systems, including bio-inspired information processing, energy systems, collective mobility and transport, as well as systemic sustainability.