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Outline:

1) Motivation
    - My background in Neuroscience
    - Justification/Historical Background of complex network approaches to Neuroscience
2) Basic Neuroscience
    - Neurons and Cortical Regions understood as oscillators
    - Cognitive implications of synchronization and noise
    - Justification for Complex/Dynamical Systems view of Neuroscience
    - Time-evolution of functional cortical systems
3) Basic Graph Theory
    - Adjacency Matrix
    - Random, Small-world, and Scale-free graphs
    - Modularity and Hierarchy
4) Presentation of Kuramoto Model
    - History of the Model – Winfree -> Strogatz -> Now
    - All-to-all coupled case and mean field transformation (and derivation)
    - Extension to various biological principles (complex network topologies, noise, time delays, inhibitory coupling)
5) Simulations and Discussions
    - Fully Coupled Net (with/without noise)
    - Random Net
    - Small-world net
    - “Brain-like” net with and without noise, time delay, inhibition
6) Future
    - My future
    - Future of the research
    - Some take-away nuggets (TBD)