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Parameter identification of age-structured epidemic models

Parameter identifiability analysis aims to determine whether model parameters can be uniquely determined from observable outputs. This is a critical step in epidemiological forecasting and the design of effective control measures. In this talk, we systematically review the theoretical foundations and practical applications of parameter identifiability and propose a framework for analyzing structural model parameter identifiability. By integrating locally and globally identifiable techniques, we systematically construct a hierarchical structure for parameter identifiability in age-structured epidemic models. Using Monte Carlo simulations and approximate Bayesian estimation methods, we identify parameters that are actually unidentifiable in the models. This is a joint work with Ziyi Wu and Maia Martcheva.