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Transient Oscillations in Chemostat Models

Despite the fact that the competitive exclusion principle holds in most classical chemostat models, transient oscillations are frequently observed in actual experiments, which cannot be explained from those classical models. What could be the source hiding behind this phenomenon? In this talk we give two possible sources, namely, non-negligible species-specific death rate and delay in growth. We show how each source can give rise mathematically to transient oscillations.

This talk is based on joint work with G. S. K. Wolkowicz and H. Xia.