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PSEUDOSPECTRAL METHODS FOR DELAY EQUATIONS IN POPULATION DYNAMICS

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Problems involving time delays generate dynamical systems on infinite-dimensional state spaces. Still much of the properties of ODEs hold. The celebrated principle of linearized stability is an example: hyperbolic equilibria or periodic orbits of nonlinear models inherit the stability features of the corresponding linearizations. The latter are based on spectral properties of certain linear operators, whose infinite dimension asks for numerical treatment. In this talk we review the basics of pseudospectral methods as applied to approximate the stability determining eigenvalues. Applications are considered in view of treating complex models of physiologically structured populations.