

## **Existence of homoclinic and stable periodic solutions for a family of delay differential equations.**

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A one-parameter family of Mackey-Glass type delay differential equations is studied. The existence of a solution, which is homoclinic to a positive equilibrium solution, is shown. The bifurcation of a stable periodic orbit from the homoclinic orbit when a parameter crosses a critical value is discussed. Local techniques are combined with global results for monotone nonlinearities as long as solutions run in a monotonicity region. A Wazewski-type argument using transversality-of-exit properties is applied to obtain the homoclinic solution. A bifurcation theorem due to H.-O. Walther is used. The verification of the assumptions used for the proofs is done numerically for a concrete example. Numerically computed approximations of solutions are shown.