

STABILITY OF COEXISTENCE STATES IN A PERIODIC PREY-PREDATOR SYSTEM

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Consider the system

$$\dot{u} = u(a(t) - b(t)u - c(t)v), \quad \dot{v} = v(d(t) + e(t)u - f(t)v), \quad u > 0, v > 0,$$

where all the coefficients are periodic with a common period and the functions b, c, e, f are positive. The periodic dependence of the coefficients models seasonal effects.

The existence of periodic solutions (coexistence states) is well understood and this talk will deal with the stability properties of these solutions. The main result is a criterion for the asymptotic stability that is inspired in a classical stability criterion for Hill's equation

$$\ddot{x} + a(t)x = 0,$$

where $a(t)$ is periodic.