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DYNAMICS OF THREE COMPETING SPECIES SYSTEM

BY

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ABSTRACT

The May-Leonard equations which describe the mutual competition between three species, is investigated. Hopf's bifurcation theory is used to establish that for $\alpha + \beta < 2$, α and β being normalized parameters which describe how the i th species affects the j th species and how the same j th species affects the i th species, respectively the critical point is a stable point, for $\alpha + \beta = 2$, limit cycle behavior occurs and for $\alpha + \beta > 2$, quasi limit cycle behavior occurs for $\alpha + \beta$ just slightly larger than two. Numerical solution of the May-Leonard equations are obtained using the Gear's method. These numerical solutions confirm the behaviors predicted for the three cases.

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