

Colloquium

A PDE system modeling the growth of phytoplankton consuming inorganic carbon with internal storage

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地 點：應用數學系多媒體教室（理 408 室）

摘 要：

This talk presents a PDE system modeling the growth of a single species population consuming inorganic carbon that is stored internally in a poorly mixed habitat. Inorganic carbon takes the forms of "CO₂" (dissolved CO₂ and carbonic acid) and "CARB" (bicarbonate and carbonate ions), which are substitutable in their effects on algal growth. We first establish a threshold type result on the extinction/persistence of the species in terms of the sign of a principal eigenvalue associated with a nonlinear eigenvalue problem. If the habitat is the unstirred chemostat, we add biologically relevant assumptions on the uptake functions and prove the uniqueness and global attractivity of the positive steady state when the species persists.

This talk is based on my recent work joint with Drs. Sze-Bi Hsu and King-Young Lam.