

1027-35-82

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Pattern formation with full cross diffusion effect.

Strongly coupled (or cross diffusion) elliptic systems of two equations will be investigated. The boundedness and Hölder regularity for solutions are proved. The Hölder estimates for gradient of solutions are then established. Finally, the fixed point theory is applied to prove existence of nonconstant positive solution(s) for cross diffusion elliptic systems. (Received February 16, 2007)