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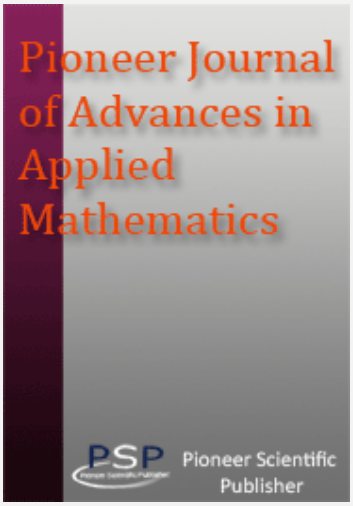

THREE-DIMENSIONAL AGGREGATION PATTERNS IN KELLER-SEGEL MODELS

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Abstract

In this study, we investigate three-dimensional aggregation patterns in two-component Keller-Segel models. The volume-filling model and the signal-dependent sensitivity model are solved numerically in three dimensions. Three dimensional specific patterns as well as lamellar, cylindrical, spherical patterns are obtained as stable motionless equilibrium patterns. The relative stability of these patterns is studied numerically on the basis of the derived free energy.

Keywords and phrases: chemotaxis, Keller-Segel model, pattern selection, stability analysis.