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A phytoplankton aggregation study by the spatial moments approximation of Individual-based Model.

Naziha Bordj, **Nadjia El Saadi**[1].

SUMMARY

The aim of this work is to study the phenomenon of aggregation in a phytoplankton population by dynamics system of spatial moments corresponding to integro-differential equations allowing to analyse population dynamics and its spatial structure. This model is developed from a phytoplankton Individual-Based Model (IBM), that is built on the basis of stochastic processes describing the branching (cell division or death) under the effect of a local competition in the division; and the movement taking into account the random dispersion and the spatial interactions between cells due to their chemosensory abilities.

Keywords: Phytoplankton, Aggregation, Competition, Dispersion, Individual-Based Model (IBM), Stochastic process, Spatial Moments, Closure moment, spatial dynamics, Integro-differential equation, Spatial and time discretization

AMS Classification: 92D25, 97N40, 45G15

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[1]LAMOPS
ENSSEA, Algiers, Algeria
email: bordji.naziha@gmail.com

[2]LAMOPS
ENSSEA, Algiers, Algeria
email: enadjia@gmail.com