

SPACE–NONLOCAL DESCRIPTION OF CELL MOVEMENT

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We propose a new space–nonlocal model based only on integral terms describing cell movement caused by various interactions. These terms retain the basic properties of the corresponding space–local (that is, differential) terms. Interactions between real objects take place at a certain distance between them, which may be caused, for example, by their geometric shapes. Unlike the local (differential) model, the proposed space–nonlocal model does not exhibit blow–ups of solutions. On the other hand, the nonlocal terms approximate the corresponding local terms. The model refers to cancer invasion on surrounding tissue, but the generalization to any movement of biological object is straightforward. The performed numerical simulations show how nonlocal effects affect the dynamics of the system under consideration.

References

- [1] M. Lachowicz, M. Matusik, K. A. Topolski, *Space–nonlocal description of cell movement*, Discrete and Continuous Dynamical Systems - B , Vol. 30 (11) (2025), pp. 4352-4362.