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Finite-volume approximation of cross-diffusion systems for tumor growth

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Abstract

We present an implicit Euler finite volume scheme for the mechanical tumor growth model proposed by Jackson and Byrne. The model comprises a cross-diffusion system with no-flux boundary conditions. The numerical scheme preserves the formal gradient-flow or entropy structure and meets the requirements for the boundedness-by-entropy method. We prove the existence of discrete solutions and the convergence of the numerical scheme.

<https://conferences.cirm-math.fr/3050.html>