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LOCAL VS NONLOCAL MODELS FOR MITOCHONDRIA SWELLING

Messoud A. Efendiev
Helmholtz Center Munich/TUM Munich
Ingolstädter, Landstrasse 1, 85764 Neuherberg, Germany
Department of Mathematics, Marmara University, Turkey
(E-mail: messoud.efendiyev@helmholtz-muenchen.de, m.efendiyev@marmara.edu.tr)

Antiga Muradova
Ankara University School of Medicine
Hacettepe Mah., A.Adnan Saygun str. 35, Altindag, Ankara, Turkey
(E-mail: antigamuradova@gmail.com)

Nijat Muradov
Ankara University School of Medicine
Hacettepe Mah., A.Adnan Saygun str. 35, Altindag, Ankara, Turkey
(E-mail: nicat98@gmail.com)

and

Hans Zischka
Helmholtz Center Munich
Ingolstädter, Landstrasse 1, 85764 Neuherberg, Germany
(E-mail: hans.zishka@helmholtz-muenchen.de)

Abstract. In this paper, we consider deterministic, continuous, nonlocal models for the mitochondrial permeability transition, i.e. mitochondrial swelling. Based on seminal papers [1], [2], [3], [5] and the book [4], in which ODE-PDE and PDE-PDE local models for the swelling of mitochondria have been considered, we suggest here new nonlocal models for this process. This new nonlocal deterministic continuous model for mitochondrial swelling scenario contains nonlocal diffusion, nonlocal chemotaxis, as well as nonlocal source term. We would like to especially emphasize that some of the new nonlocal models that we consider in this paper do not have local counterparts in the literature.

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