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**Maciej PASZYNSKI**

AGH University of Sciences and Technology, Krakow, Poland

## FAST ISOGEOMETRIC FINITE ELEMENT METHOD SOLVER FOR MELANOMA TUMOR GROWTH SIMULATIONS

In this talk we present an application of the fast algorithm for isogeometric L2 projections for simulations of the tumor growth. We introduce first the system of PDEs describing the model of the melanoma growth, including tumor cell density, flux, pressure, extracellular and degraded extracellular matrices. We also introduce a discrete model of vasculature that provides an oxygen source to the system. The system is solved using Euler scheme and fast isogeometric L2 projections, utilizing the alternating directions solver. Every 10 time steps of the simulation, we couple our continuous model with the discrete vasculature model. We conclude the presentation with the two dimensional numerical results.

[1] Marcin Los, Maciej Paszynski, Adrian Klusek, Witold Dzwiniel, Application of fast isogeometric L2 projection solver for tumor growth simulations, submitted to Computer Methods in Applied Mechanics and Engineering (2016)