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Talk announcement

Marvin Fritz

(RICAM)

Tuesday, Nov 8, 2022
15:30, S3 048

Well-posedness of mixed-dimensional and nonlocal phase-field models of Cahn-Hilliard type applied to tumor growth

In this talk, we study various tumor growth models following the hallmarks of cancer by Hanahan and Weinberg. Such systems are based on a multiphase ansatz using constitutive laws and balance laws for single constituents. Biological phenomena such as temporal and spatial nonlocal effects, as well as mixed-dimensional couplings, are taken into account. We investigate these tumor models with respect to their mathematical well-posedness and the existence of weak solutions. We will face several analytical challenges, such as the ill-posedness of trace operators from 3D to 1D and the absence of a chain rule for fractional derivatives. Lastly, we discuss approximations of the systems and demonstrate some numerical simulations. P.S. Afterwards, we go to "Alte Welt" (Hauptplatz) at 6pm.