

1116-35-2094 **Konstantina Trivisa*** (trivisa@math.umd.edu). *On a nonlinear model for tumor growth:
Global existence of weak solutions.*

Mechanical models for tumor growth are used extensively in recent years for the analysis of medical observations and for the prediction of cancer evolution based on imaging analysis. This work deals with the dynamics of a nonlinear system for tumor growth and establishes the global existence of weak solutions. The system under investigation is given by a multi-phase flow model: the densities of the different cells are governed by a transport equation for the evolution of tumor cells, whereas the velocity field is given by a Brinkman regularization of the classical Darcy's law. Furthermore, an efficient finite difference scheme is proposed and shown to converge to a weak solution of the system. Our approach relies on convergence and compactness arguments in the spirit of Lions (1998). (Received September 21, 2015)