

Towards Forecasting of Brain Tumors

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Uncertainties in prediction of brain tumor growth arise from many sources, some of which are the initial conditions and model parameters as well as variances in brain geometry. Additionally, the use of MRI data to assess the location and size of the tumor has inherent uncertainties due to registration error and the underlying population densities. In this poster session, we present preliminary results from numerical experiments that explore the effect of various uncertainties on brain tumor growth. We use different brain cancer diffusion models and a state-of-the-art data assimilation algorithm to provide state estimates of a brain tumor under various assumptions of model and observational error. This research is part of a greater effort to improve the treatment of brain cancer through the use of mathematical modeling and computer simulation.