1154-92-1907 **Erica M. Rutter*** (erutter2@ucmerced.edu), **H.T. Banks** (htbanks@ncsu.edu) and **Kevin B. Flores** (kbflores@ncsu.edu). *Non-Parametric Estimation of Intratumoral Heterogeneity from Spatiotemporal Data.*

Cancer is an extremely heterogeneous system. Intraturmoral heterogeneity can be modeled by assuming that some parameters in an underlying dynamical system are not constants, but are probabilistically distributed across the population. We model Glioblastoma Multiforme (GBM), a primary brain tumor, using a random differential equation version of the reaction-diffusion equation in which the parameters describing diffusion and proliferation are random variables with an underlying distribution. The underlying distribution informs the frequency of individuals that exhibit each growth rate or diffusion rate along the set of possible values.

We present techniques for determining the underlying distribution, quantifying uncertainty in those distributions, and discussing the effects that including heterogeneity have on predictions of treatment efficacy. (Received September 16, 2019)