1172-60-152   **Tuan A Phan*** (`tphan@uidaho.edu`), 875 Perimeter Dr MS 1122, Moscow, ID 83844, and
Jianjun P Tian (`jtian@nmsu.edu`). *Hopf bifurcation without parameters in deterministic and stochastic modeling of cancer virotherapy, part II.* Preliminary report.

In this research, we propose 4 dimensional deterministic and stochastic models to explain the complexity of interactions in cancer virotherapy and outcomes of current preclinical and clinical trials of oncolytic viral treatments. In part II, we analyze the stochastic model theoretically and numerically. The dynamics of the model is determined by two combined ratios of relative immune clearance rates and noise intensities. According to these two combined ratios, the model can be reduced to two subsystems, one with only innate immunity and one with only adaptive immunity, which provide detailed dynamical properties of the full system. Particularly, when these two ratios are the same, we found that there is a collection of exponentially ergodic invariant probability measures for the full system supported by the interior of its positive invariant domain. Furthermore, in this case, we show using numerical simulations that the full system also exhibits stochastic Hopf bifurcation without parameters as in part I. (Received August 24, 2021)