1020-93-222 Weiqing Gu\* (gu@math.hmc.edu), 1250 N. Dartmouth Ave, Claremont, CA 91711, Lisette de Pillis (Lisette\_depillis@hmc.edu), 1250 N. Dartmouth Ave, Claremont, CA 91711, and Renee K. Fister (renee.fister@murraystate.edu), Murray State University, Murray, KY 42071. Optimal Control of Immunotherapy and Chemotherapy of Tumors. Preliminary report.

This talk is concerned with how to apply optimal control theory and use numerical techniques to reveal pathways to new optimally integrated chemoimmunotherapy protocols in treatment of cancer. First we will present an mathematics model with controls and review the method of optimal control. Then we will discuss the following issues:

- How to apply the optimal control method to our model?
- How to seek a bang-bang solution?
- Consider a quadratic combination in our objective functional for the purpose of seeking a unique solution.
- Use numerical techniques.
- Future works.

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