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Tin Phan* (tin.t.phan@asu.edu), **Javier Baez** and **Yang Kuang**. *Mathematical Models for Prostate Cancer with Androgen Resistance under Intermittent Androgen Suppression Therapy.*

A standard treatment for advanced prostate cancer is the Androgen Deprivation Therapy (ADT). This accounts for the fact that tumor cells' growth is androgen-dependent, but the development of androgen-independent tumor cells usually takes place and renders the treatment ineffective after several years. Due to the reduction in the male hormone during treatment, undesirable effects cause loss in quality of life. Intermittent Androgen Suppression Therapy is the idea of alternating between on and off treatment period in accordance to the prostate specific antigen level. This has been shown to give patients better life quality; however, it remains controversial whether it is superior to the continuous-ADT in term of prolonging the life of the patient. Among other issues, there is a rising need for predicting power of cancer progress to supply patients and physicians with the necessary information to decide on the best course of action. Numerous mathematical models have been developed to study prostate cancer. We review some of the major efforts in the last decade and put forward a novel approach that incorporates both PSA and androgen clinical data. We compare the models and find that incorporating the androgen in a more realistic way can increase the accuracy in prediction. (Received September 20, 2016)