Laminate robots offer the potential of lighter and simpler mechanism over their traditional counterparts. However, their non-rigidity makes laminate mechanisms difficult to model. In order to design a jump-gliding robot utilizing laminate construction, a simulation is developed which can be used to optimize the design parameters of the jumping platform’s legs. This simulation is confirmed and refined by comparing with experimental data from multiple leg prototypes. The goal is to utilize a model-driven approach to simulate design parameters by extrapolating beyond the space that has been tested.

Initial comparisons between simulated and experimental data showed considerable discrepancies as shown in Figure 1. Contact was found to be a major factor causing these discrepancies. Since contact is a known limitation of simulators, it was removed from the model by inverting the leg and fixing its tip to the contact surface. Through this approach, a drag model could be formed that approximated the remaining discrepancies between the simulation and experimental results. This produced results that matched the experiment much more closely as shown in Figure 2.

Future work will utilize this model to inform the selection of a motor and leg parameters to construct a jumping platform. Although the model was not able to account for all of the factors affecting how high a particular leg will jump it will