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### ***GEKKO Optimization Suite***

GEKKO is an optimization suite for Python [1]. GEKKO specializes in dynamic optimization problems for mixed-integer, nonlinear, and differential algebraic equations (DAE) problems. By blending the approaches of typical algebraic modeling languages (AML) and optimal control packages, GEKKO greatly facilitates the development and application of tools such as nonlinear model predictive control (NMPC), real-time optimization (RTO), moving horizon estimation (MHE), and dynamic simulation. GEKKO is an object-oriented Python library that offers model construction, analysis tools, and visualization of simulation and optimization. In a single package, GEKKO provides model reduction, an object-oriented library for data reconciliation/model predictive control, and integrated problem construction/solution/visualization. This presentation introduces the [GEKKO Optimization Suite](#), presents GEKKO's approach and unique place among AMLs and optimal control packages, and cites several examples of problems enabled by the GEKKO library.

#### **Biography:**

Logan Beal is a PhD candidate at Brigham Young University in the Process Research and Intelligent System Modeling (PRISM) group. His research interests are in the areas of nonlinear predictive control, nonlinear programming solver development, process simulation, real-time numerical methods, and moving horizon estimation. He led the development of combined scheduling and control for the NSF EAGER project (#1547110): *Cyber-Manufacturing with Multi-echelon Control and Scheduling*. He is joining ExxonMobil as an Application Engineer.

[1] Beal, L.D.R., Hill, D., Martin, R.A., and Hedengren, J. D., GEKKO Optimization Suite, Processes, Volume 6, Number 8, 2018, doi: 10.3390/pr6080106.

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