Applications, Examples, and Math Apps

New Examples & Applications

- **Antenna Array**: Calculate the array factor and directivity for a uniform linear antenna array.

- **Amplifier Gain**: Plot the gain of an amplifier circuit for both ideal and non-ideal response.

- **Amplifier Gain App**: Plot the gain of an amplifier circuit for both ideal and non-ideal response using sliders and input fields.

- **Bandpass Filter**: Investigate the frequency response for a Bandpass filter.

- **Beam Distributed Point Load**: Derive an expression for the deflection of a beam with a distributed load and a point load.

- **Binary Distillation**: Find the required number of stages for separating two liquid components by using the McCabe-Thiele method.

- **Bolt Group Coefficient**: Calculate the bolt coefficient for eccentrically loaded bolt groups.

- **Bubble Plot**: Visualize multiple data sets using BubblePlot.

- **Chemical Kinetics Parameter Estimation**: Estimate the rate parameters for a reversible chemical reaction.

- **Choropleth Maps with Custom Data**: Example of visualizing custom data using choropleth maps.

- **Countercurrent Heat Exchanger**: Model the temperature dynamics of a countercurrent double-pipe heat exchanger.

- **Economic Pipe Sizing**: Minimize the total cost of pipework across the lifetime of a plant.

- **Filtering Audio App**: Apply filters to a WAV file.

- **Fit Head Flow Rate Data**: Fit head-flow rate data to a pump curve.

- **Fuel Pod**: Optimize the design of a fuel pod.

- **Gas Orifice**: Calculate the flow rate through a large-diameter orifice.

- **Interacting Tanks**: Model liquid flow between three tanks connected by two pipes.

- **Inverted Pendulum**: Simulate the dynamics of an inverted pendulum on a cart.

- **Max Flow Rate in a Partially Filled Pipe**: Find the maximum flow rate in a partially filled circular pipe.

- **Max Pressure Surge**: Find the excess pressure generated by water hammer due to instantaneous valve closure.

- **MOSFET Parameter Estimation**: Estimate the KP and VTO SPICE parameters for an n-channel enhancement mode MOSFET.

- **Pump Power**: Calculate the pump power for flow between two reservoirs.

- **Pyramidal Horn**: Calculate the optimum design parameters for an X-band pyramidal horn.

- **Robot Arm**: Model a robot arm with three degrees of freedom.

- **Settling Velocity**: Find the terminal velocity of a particle settling in a fluid.

- **Simple Units**: Use units in the Simple Units environment.

- **Simply Supported Beam**: Perform a design analysis on a simply supported beam with torsional loading.

- **Steady State Markov Chain**: Compute the steady-state vector of a Markov chain.

- **Suitcase Model**: Model a two-wheeled suitcase using delay differential equations.

- **Three Reservoir Problem**: Calculate the flow rates, flow directions, and head at the common junction connecting three reservoirs.

- **Tuned Mass Damper**: Find the optimum spring and damping constant for a tuned mass damper.

- **Vehicle Ride**: Analyze vehicle ride and handling.

- **Wave Height**: Fit wave height data to a probability distribution.

- **World Map Projections**: Explore various world map projections.