Mass Properties

What is the Mass Properties function?

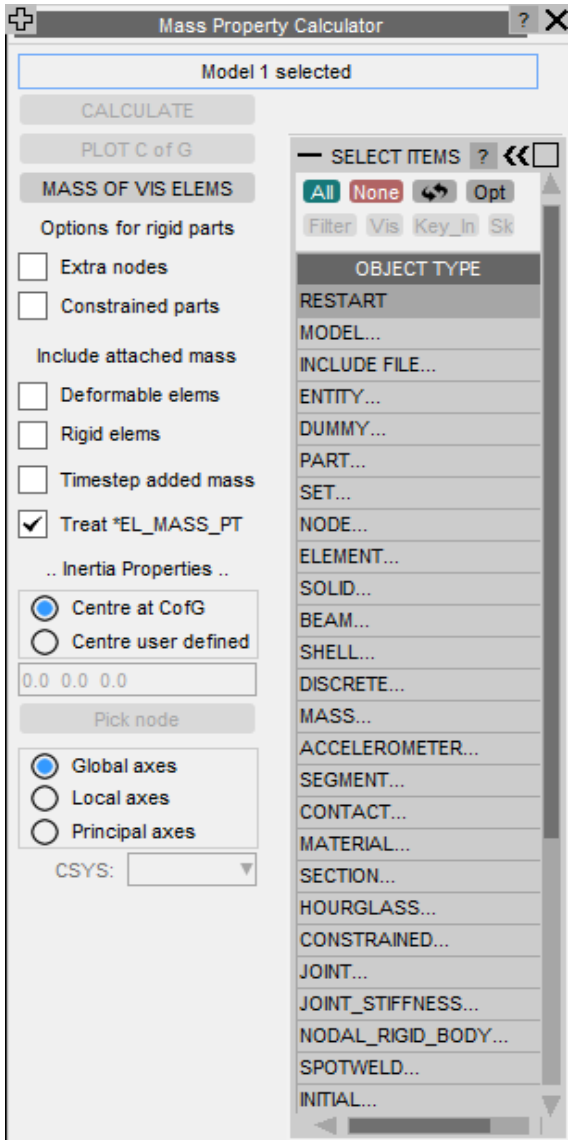
PRIMER

- The mass properties tool in PRIMER allows you to calculate the mass properties of a selection of items from the model.

- Properties calculated include:
  - Total mass.
  - Centre of gravity.
  - Inertia tensor.
  - Area/Volume of any selected shell/sold elements.

Mass Properties Panel

- **CALCULATE** – The option will calculate the mass properties of the selected entities.
- **PLOT C of G** – This will plot the centre of gravity for the selected entities.
- **MASS OF VIS ELEMS** – Calculates the mass properties of the visible entities.
- If a selection is made that does not devolve to elements (such as a constrained joint) Primer will sum the masses of the nodes involved and report that.
- **Options for rigid parts** – If a rigid part is selected, these options are used to include mass from deformable nodes in *Constrained_extra_nodes and *Constrained_rigid_bodies (slave parts) in the calculation.
- **Include attached mass** –Options may be set to include lumped mass attached to the nodes of selected elements. For a deformable part the value of lumped mass is shared equally amongst all the elements that attach to the node, so the calculation will only include that share that applies to selected/visible elements.
- **Timestep added mass** – will include timestep added mass for deformable elements
- **Inertia Properties**:
  - By default the inertia tensor is reported in the global axis system and about the CofG of the selected elements.
  - The tensor may also be expressed about the principle axes of CofG by ticking the “Principle axes” option.
  - In the most general case it may be expressed about an arbitrary centre and in a local axis system defined by the user by selecting “Centre user defined” and “Local axes”.



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