PARAM, EFFMAS

Bulk Data Entry

Outputs modal participation factors and effective mass for normal modes analyses.

Parameter	Values	Description

EFFMAS	<YES, NO, Integer> Default = NO	When *EFFMAS* ≤ 0 or NO, the modal participation factors, modal participation factor ratio, modal effective mass and modal effective mass fraction are not output for normal modes analysis. When *EFFMAS* > 0 or YES, the modal participation factors, modal participation factor ratio, modal effective mass, and modal effective mass fraction will be computed and output to the `.out` and `.pch` files (OUTPUT,*PUNCH* should be active for `.pch` file output) for normal modes analysis. They are computed as: Modal Participation Factor = $MPF = \frac{\mathbf{A}^T\mathbf{MV}}{\mathbf{M}_{\text{modal}}}$ The Modal Participation Factor is a measure of how close each mode is to a rigid body mode. The Modal Participation Factor Ratio is the Modal Participation Factor for each rotational and translational direction divided by the maximum Modal Participation Factor of all the modes for that direction. So, each of the six directions will have a value of 1.0 for the mode that has the maximum Modal Participation Factor and the other modes will have a value less than 1.0. Modal Effective Mass = $EFFMAS = MPF \times \left[\mathbf{A}^T\mathbf{MV}\right]$ The Modal Effective Mass is a measure of how much mass is associated with each mode. Modal Effective Mass = $EFFMFR = EFFMAS/RBM$ The Modal Effective Mass fraction is a ratio of Modal Effective mass and the Rigid Body mass. Where, $\mathbf{A}$ Matrix of eigenvectors $\mathbf{M}$ System mass matrix $\mathbf{V}$ Objective function matrix.

		Six rigid body modes are used as objective function in normal modes analysis to obtain MPF and $EFFMAS$. $\mathbf{M}_{\text{modal}}$ Diagonal modal mass matrix RBM Rigid body mass