

Multi-support excitation

Acceleration loads can be applied only to all supports. However, you can analyze the structure for multi-support input motions by using displacement time history records rather than acceleration time history records. If you have acceleration records, you would need to convert these to displacement records.

Once you have the displacement record, define a Load pattern in which you apply a unit value of joint displacements in the direction of acceleration at the affected joint. For this to affect the structure, you also need to restrain these joints in the direction of loading only. Then create a time history function that will describe a variation of these displacements in time. Finally, define a time history Load case that will be specified using both the displacement and the time function as shown in the figure below.

Analysis Case Data - Linear Direct Integration History

Analysis Case Name: MULTI-1 Set Def Name Notes: Modify/Show... Analysis Case Type: Time History

Stiffness to Use:
☒ Zero Initial Conditions - Unstressed State
☐ Stiffness at End of Nonlinear Case [Dropdown]
Important Note: Loads from the Nonlinear Case are NOT included in the current case

Analysis Type:
☒ Linear
☐ Nonlinear

Time History Type:
☐ Modal
☒ Direct Integration

Modal Analysis Case:
Use Modes from Case: MODAL

Time History Motion Type:
☒ Transient
☐ Periodic

Loads Applied

Load Type	Load Name	Function	Scale Factor
Load	SUP-3-DISP	SINE	1.
Load	SUP-3-DISPL	SINE	1.
Load	SUP-2-DISPL	SINE	1.
Load	SUP-1-DISPL	SINE	1.

Add Modify Delete

☐ Show Advanced Load Parameters

Time Step Data:
Number of Output Time Steps: 100
Output Time Step Size: 0.1

Other Parameters:
Damping: Proportional Damping Modify/Show...
Time Integration: Hilber-Hughes-Taylor Modify/Show...

OK Cancel

Function specifies variation of each displacement in time

Support displacement load specified at each support