#1299: OptiStruct – Thermal expansion coefficient support for Rigid elements

Product: OptiStruct
Product Version: OptiStruct 12.0 or above

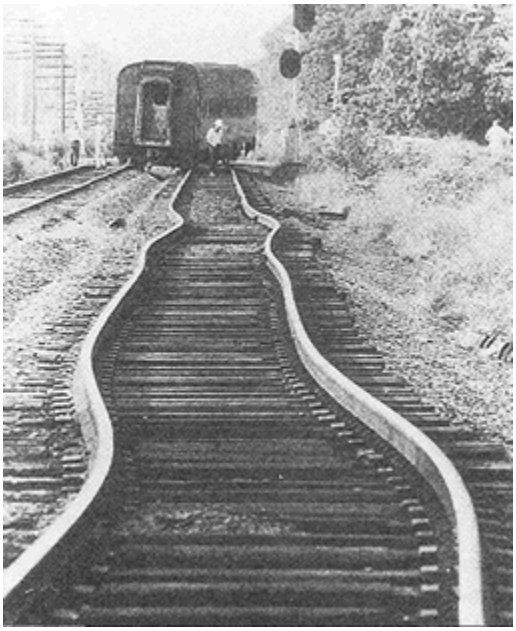
Topic Objective

Thermal expansion coefficient support for Rigid elements in OptiStruct.

Topic Detail

What is it?

Thermal expansion is the tendency of matter to change in shap, area and volume in response to change in temperature.The degree of expansion divided by the change in temperature is called the material‘s coefficient of thermal expansion.



How to setup in OptiStruct?

Supported by ‘ALPHA’ field on RBE2, RBE3, RROD, RBAR

- Thermal load is requested by the TEMPERATURE(INITIAL) and TEMPERATURE(LOAD) subcase information entries.
- The temperature of the element is taken to be the average of the temperatures at all the nodes of the element.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
RBAR	EID	GA	GB	CNA	CNB	CMA	CMB	ALPHA	

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
RBE2	EID	GN	CM	GM1	GM2	GM3	GM4	GM5	
	GM6	GM7	GM8	-etc.-	ALPHA				

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
RROD	EID	GA	GB	CMA	CMB	ALPHA			

Solver deck

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
RBE3	14		100	1234	1.0	123	1	3	
	5	4.7	1	2	4	6	5.2	2	
	7	8	9	5.1	1	15	16		
	UM	15	123	5	13	7	3		
	ALPHA	1.45e-5							

Coefficient of thermal expansion of 1.45e-5 applied on the RBE3