SPRING CONSTANTS EQUIVALENT TO RIGIDITY OF BEAM v1.0

***Name:*** SPRING\_CONST

The following program calculates for a one-field beam with modulus of elasticity **E** and the moment of inertia **I** the equivalent spring-constant values ( vertical spring **c-v** and rotational spring **c-** ) at any point **“a”** of the beam’s length **L**. The following supports are allowed:

1) hinged/fixed at both ends (code-number for input: **0/1**)

2) fixed at one end and hinged at the opposite end ( cf. example )

3) clamped at the **left** end only ( cantilever beam) ( Input **0** or **1** for left and **-1** for **right** end ).

Units for input are free to be chosen, but must be consistent to each other !

***Installation:***

Transfer ***“spring\_const”*** to MyLib, open the file and start “**springcst()”** from the var-menu.

***Example:*** Which are the equivalent spring constants at this point for

the given beam? ( Units in this example: [MN] and [m] )

L = 7,5

a = 3,1

**I = 1.927E -4 m4; E = 210 000 MN/m2 MMMN/m2**

b = 4,4

1.) Start **“springcst()”**

2.) Input the following data into the corresponding fields ( **EE** stands for the “EE”-key ):

E = 210 000 [MN/m**2**]; I = 1.927 **EE** -4 [m**4**] ( = I of HEB 280 ) ; a = 3.1 [m]; b = 4.4 [m];

left support = **1** ( support condition left end: 0 / 1 = hinged / fixed ) ;

right support = **0** ( 0 / 1 /-1 = hinged/fixed/not supported (cantilever beam) )

**(To enter negative exponents be sure to use the (-) – key! )**

3.) **Result : L/R=f**(ixed)**/h**(inged) **– a/b=3.1/4.4**

**C-v : 13,2045416** (according to the chosen units in [MN/m]

**C- : 59,451557**  [MNm]

WARNING and DISCLAIMER: This program is provided as freeware without any kind of warranty, SO USE AT YOUR OWN RISK !

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