

CoMUI – Compliant Mechanism User Interface

Software: Design tool for the analysis and synthesis of freely designable compliant mechanisms including a branching point

CoMUI - Compliant Mechanism User Interface - Version 1.2 Beta

Design **Parametric Study**

Material properties:
E in MPa: 72000
ν: 0.3

Initial position and orientation of mechanism:
x(s=0) in mm: 0
y(s=0) in mm: 0
θ(s=0) in °: 0

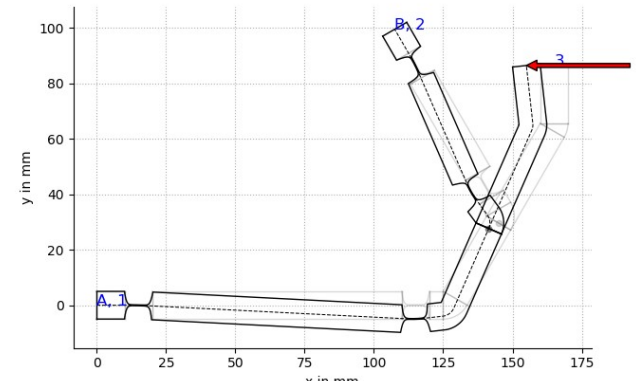
Boundary condition at origin of mechanism (A):
☒ Fixed support ☐ Hinged support

Boundary conditions at end of mechanism (B):
☐ Free end ☒ Fixed support
☐ Hinged + Slider in x ☐ Hinged + Slider in y
☐ Slider in x ☐ Slider in y
☐ Hinged support

Save mechanism Load mechanism

Design a new compliant mechanism by adding elements to it

Beam element Flexure hinge Curved beam element Remove branching point



Clear graph

Parameters of rod 1 Parameters of rod 2 Parameters of rod 3

Input and results table - Define the parameters of each element of the mechanism

	theory	L in mm	H in mm	w in mm	h in mm	n	α in °	r in mm	Fx in N	Fy in N	ux in mm
1. element	0	10	10	6	-	-	-	-	-	-	-0.000000
2. element	0	10	10	6	0.3	8	-	-	-	-	-0.005366
3. element	0	90	10	6	-	-	-	-	-	-	-0.121162
4. element	0	10	10	6	0.3	8	-	-	-	-	-0.145758
5. element	0	5	10	6	-	-	-	-	-	-	-0.176396
6. element	0	5.24	10	6	-	-	60	5	-	-	-0.479276

Analyze

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Features:

- standalone application
- modeling of concentrated and distributed compliance
- intuitive and fast establishment of a new mechanism design
- various boundary conditions possible
- large deflections considered
- bending, shear and lateral contraction can be considered
- parametric studies
- numerical solution within a few seconds
- displacements, strains, angles obtained for each section

Application:

- design and modeling of compliant mechanisms
- analysis of the deformation behavior
- analysis of force-displacement dependencies
- optimization of geometry based on parametric studies