
midplane

Computes the midplane strains and curvatures

Inputs

tplies - Thickness of each ply
nplies - Number of plies
[A] - Extensional stiffness matrix
[B] - Coupling stiffness matrix
[D] - Bending stiffness matrix
[NM] - Mechanical forces acting on laminate
[MM] - Mechanical moments acting on laminate
[NT] - Fictitious thermal forces acting on laminate
[MT] - Fictitious thermal moments acting on laminate
[NC] - Fictitious moisture forces acting on laminate
[MC] - Fictitious moisture moments acting on laminate

Outputs

[eps0] - Midplane strains
[kappa] - Midplane curvatures

Calling the Function

```
[eps0,kappa]=midplane(A,B,D,NM,MM,NT,MT,NC,MC)
```

Testing File

Click [here](#) to see a testing file for using the function midplane

Example

Inputs:

Extensional Stiffness Matrix:

23710000	13410000	14640000
13410000	23710000	14640000
14640000	14640000	15010000

Coupling Stiffness Matrix:

1.0e+03 *		
-1.3400	0.0000	-0.5334
0.0000	1.3400	0.5334
-0.5334	0.5334	0.0000

Bending Stiffness Matrix:

0.2907	0.1443	0.1641
0.1443	0.2907	0.1641
0.1641	0.1641	0.1630

Mechanical Forces:

4
5
15

Mechanical Moments:

7
8
11

Fictitious Thermal Forces:

6787
6787
-3361

Fictitious Thermal Moments:

0.1538
-0.1538
-0.0000

Fictitious Moisture Forces:

14900000
14900000
-7632000

Fictitious Moisture Moments:

349.2000
-349.2000
-0.0000

Outputs:

Extensional Stiffness Matrix:

2.9220
2.9133
-5.5769

Coupling Stiffness Matrix:

1.0e+03 *
8.7460
-8.7920
0.1425

Description

Outputs the midplane strains as well as curvatures in vector form:
[eps0x eps0y eps0xy] and [kappax kappay kappaxy]