
moduli_mom

Computes elastic moduli of a unidirectional lamina using the mechanics of materials method

Inputs

Ef - Fiber elastic modulus
Em - Matrix elastic modulus
nuf - Fiber Poisson's ratio
numm - Matrix Poisson's ratio
Vf - Fiber volume fraction

Outputs

moduli - [E1 E2 nu12 G12]
E1 - Local longitudinal elastic modulus
E2 - Local transverse elastic modulus
nu12 - Local major Poisson's ratio
G12 - Local in-plane shear modulus

Calling the Function

```
[moduli]=moduli_mom(Ef,Em,nuf,numm,Vf)
```

Testing File

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

Example

Inputs:

Fiber Elastic Modulus: 8.5e+10
Matrix Elastic Modulus: 3.4e+09
Fiber Poisson's ratio: 0.2
Matrix Poisson's ratio: 0.3
Fiber Volume Fraction: 0.6

Outputs:

Lamina Modulii and Poisson's Ratios

Ex		5.236E+10
Ey		8.01887E+09
nuxy		0.24
Gxy		3.09767E+09

Table:

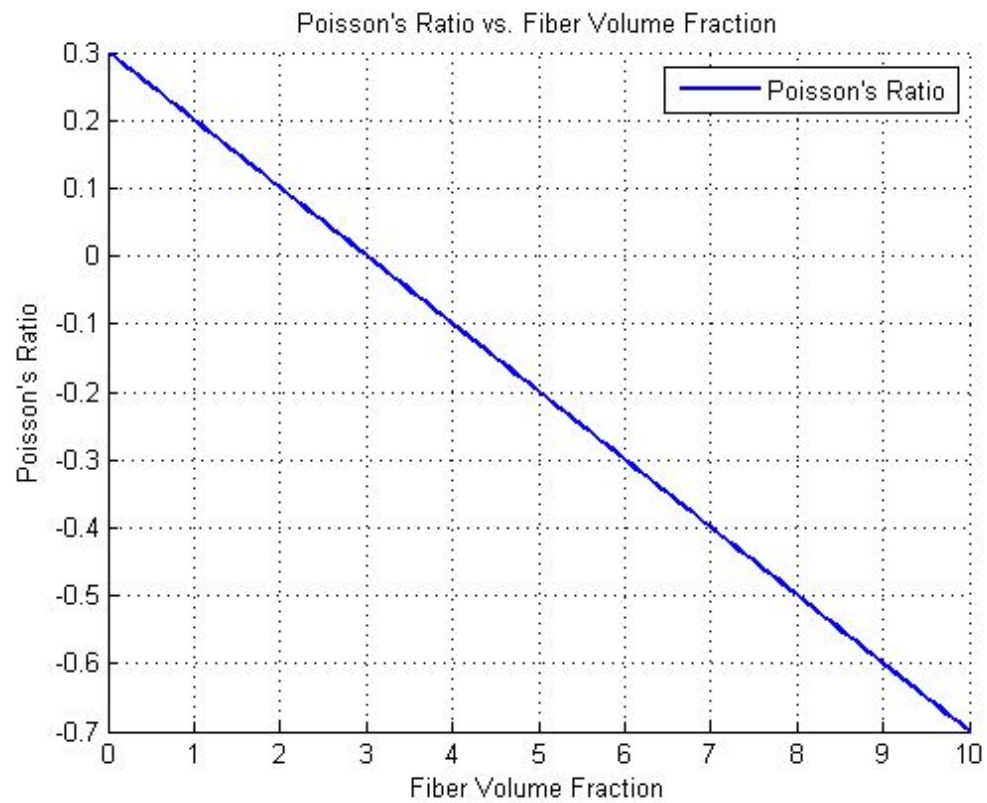
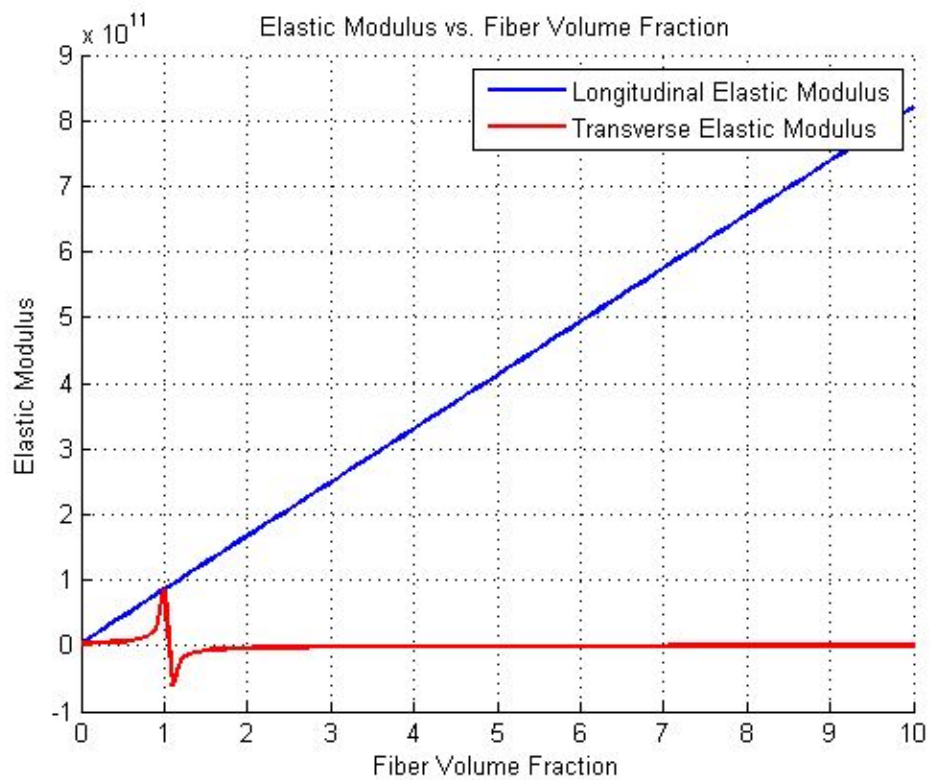
Lamina Modulii and Poisson's Ratios

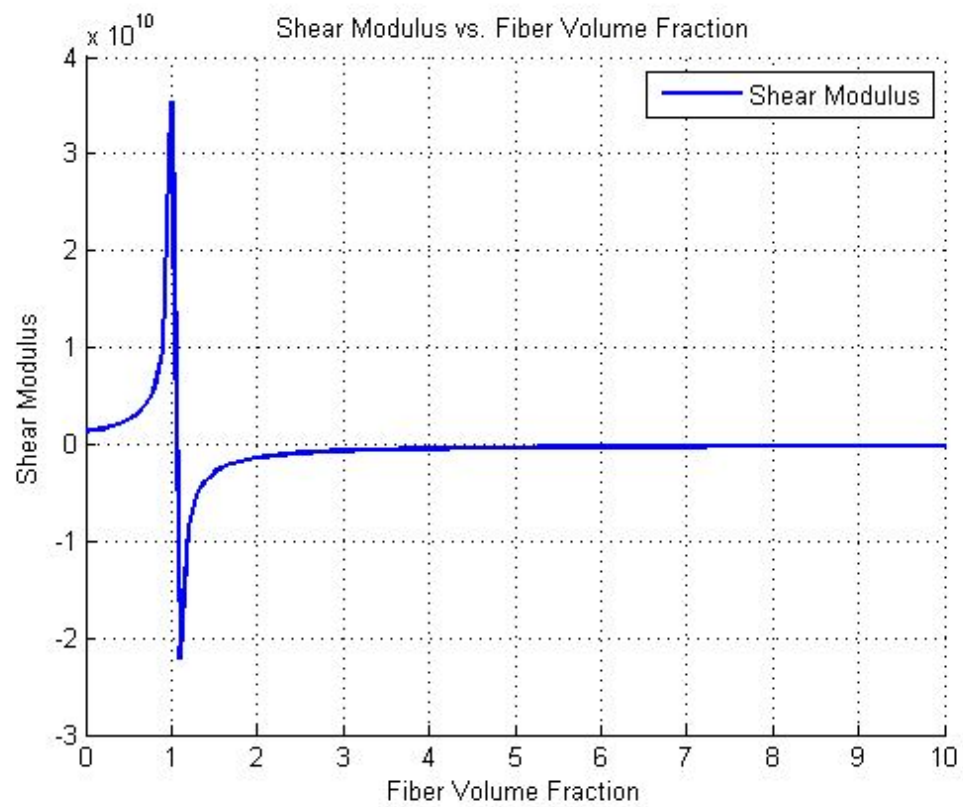
Vf	Ex	Ey	nuxy
0.00	3.4000E+09	3.4000E+09	0.3000
0.10	1.1560E+10	3.7611E+09	0.2900
0.20	1.9720E+10	4.2079E+09	0.2800
0.30	2.7880E+10	4.7753E+09	0.2700
0.40	3.6040E+10	5.5195E+09	0.2600
0.50	4.4200E+10	6.5385E+09	0.2500
0.60	5.2360E+10	8.0189E+09	0.2400
0.70	6.0520E+10	1.0366E+10	0.2300
0.80	6.8680E+10	1.4655E+10	0.2200
0.90	7.6840E+10	2.5000E+10	0.2100
1.00	8.5000E+10	8.5000E+10	0.2000

Gxy

1.3077E+09
1.4471E+09
1.6197E+09
1.8390E+09
2.1271E+09
2.5223E+09
3.0977E+09
4.0132E+09
5.6971E+09
9.8152E+09
3.5417E+10

Graphs:





Description

Outputs elastic moduli and Poisson's ratio of a unidirectional lamina in matrix form: $[E1 \ E2 \ \nu_{12} \ G_{12}]$