

It's a packet of functions for an advanced materials analysis through examining tensions and deformations.

To install the functions enter install() in the home screen: the program creates the new fold 'Mattbox', all the functions in it and the custom box for an easier use.

Functions

Deform([Displacement Vector],[Variables Vector]→[[Deformation Matrix]]

$$deform(\llbracket u_i(x_i) \rrbracket, \llbracket x_i \rrbracket) \rightarrow \llbracket \mathbf{e}_{ij} \rrbracket$$

Invar([Matrix])→[Invariant vector]

$$in\ var(\llbracket \mathbf{s}_{ij} \rrbracket) \rightarrow \begin{bmatrix} I_1 \\ I_2 \\ I_3 \end{bmatrix}$$

Pcp_γ([Deformation Matrix])→[Principal Angular Deformation Vector]

$$pcp_g(\llbracket \mathbf{e}_{ij} \rrbracket) \rightarrow \begin{bmatrix} g_I \\ g_{II} \\ g_{III} \end{bmatrix}$$

Pcp_σ([Tension (or Deformation) Matrix])→[Principal Tension (or Deformation) Vector]

$$pcp_se(\llbracket \mathbf{s}_{ij} \rrbracket) \rightarrow \begin{bmatrix} s_I \\ s_{II} \\ s_{III} \end{bmatrix}$$

$$pcp_se(\llbracket \mathbf{e}_{ij} \rrbracket) \rightarrow \begin{bmatrix} e_I \\ e_{II} \\ e_{III} \end{bmatrix}$$

Pcp_τ([Tension Matrix])→[Principal Tangential Tension Vector]

$$pcp_t(\llbracket \mathbf{s}_{ij} \rrbracket) \rightarrow \begin{bmatrix} t_I \\ t_{II} \\ t_{III} \end{bmatrix}$$

Switches([Tension (or Deformation) Matrix])→ [[Tension (or Deformation) Switch]]

$$switches(\llbracket \mathbf{e}_{ij} \rrbracket) \rightarrow \llbracket e_{ij} \rrbracket$$

$$switches(\llbracket \mathbf{s}_{ij} \rrbracket) \rightarrow \llbracket s_{ij} \rrbracket$$

Δ([Deformation Matrix])→Δ

$$\Delta(\llbracket \mathbf{e}_{ij} \rrbracket) \rightarrow \Delta$$

ε_σ([Deformation Matrix],E,v)→[[Tension Matrix]]

$$\mathbf{e} _ \mathbf{s}(\|\mathbf{e}_{ij}\|, E, \mathbf{n}) \rightarrow \|\mathbf{s}_{ij}\|$$

$$\sigma_ \varepsilon([\text{[Tension Matrix]}], E, \mathbf{v}) \rightarrow [\text{[Deformation Matrix]}]$$

$$\mathbf{s} _ \mathbf{e}(\|\mathbf{s}_{ij}\|, E, \mathbf{n}) \rightarrow \|\mathbf{e}_{ij}\|$$

$$\Phi \varepsilon([\text{[Deformation Matrix]}], E, \mathbf{v}) \rightarrow \Phi$$

$$\Phi \mathbf{e}(\|\mathbf{e}_{ij}\|, E, \mathbf{n}) \rightarrow \Phi$$

$$\Phi \varepsilon([\text{[Deformation Matrix]}], E, \mathbf{v}) \rightarrow \Phi$$

$$\Phi \mathbf{s}(\|\mathbf{s}_{ij}\|, E, \mathbf{n}) \rightarrow \Phi$$

This program has been already used many times without problems. If you find any bug first assure you to have selected the English language in the Mode and not to have translated the code with any program. If the problem persists, please, let me know.

For a better and faster answer, please, enclose some screenshot of the bug: entered inputs, expected outputs, error messages, erroneous code line, Mode setting... it will help me very much!

My address is paolosilingardi@interfree.it ; you can find all my programs at this address:

<http://www.ticalc.org/archives/files/authors/44/4458.html> . Remember to vote this program in the site!

Paolo Silingardi