define the required stress tensor (for the stress-free state the zero values must be set

@s=(0, 0, 0, 0, 0, 0, 0)

$$\sigma_{ij}^{k}$$

get the stress tensor from Abinit code for our structure

sub get_output_results

$$\sigma_{ij}^{v}$$

calculate stress difference (residual stresses)

foreach $i (1..6) {$ds[$i]=$s[$i]-$sig[$i]}

$$\Delta\sigma_{ij} = \sigma_{ij}^{k} - \sigma_{ij}^{v}$$

the residual stress is multiplied by the convergence parameters (proportional to average elastic compliance coefficients) and the transformation (Jacobian) matrix is calculated

@e=(0, $ds[1]*$du[1]+1, $ds[2]*$du[2]+1, $ds[3]*$du[3]+1, $ds[4]*$du[4], $ds[5]*$du[5], $ds[6]*$du[6]);

$$J = \Delta\sigma_{ij} \cdot s_{ij}^{e} + \delta_{ij},$$

The transformation matrix is aplied to a set of translation vectors to get a new set.

see the @r1, @r2 and @r1

$$r_{ij}^{n} = J \cdot r_{ij}^{(n-1)}$$