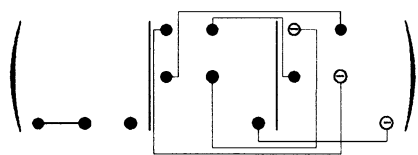


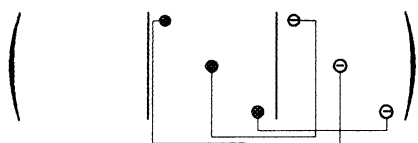
1.1. INTRODUCTION TO THE PROPERTIES OF TENSORS



There are 7 independent components.

1.1.4.8.5.2. Group 422

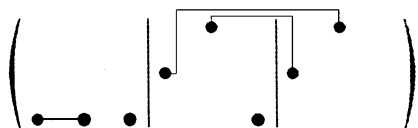
One combines the reductions for groups 4 and 222:



There are 3 independent components.

1.1.4.8.5.3. Group 4mm

One combines the reductions for groups 4 and 2m:



There are 4 independent components.

1.1.4.8.5.4. Group 4/m

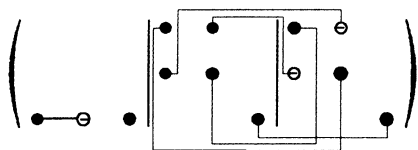
All the components are equal to zero.

1.1.4.8.5.5. Group  $\bar{4}$

The matrix corresponding to axis  $\bar{4}$  is

$$\begin{pmatrix} 0 & \bar{1} & 0 \\ 1 & 0 & 0 \\ 0 & 0 & \bar{1} \end{pmatrix}$$

and the form of the  $3 \times 9$  matrix is

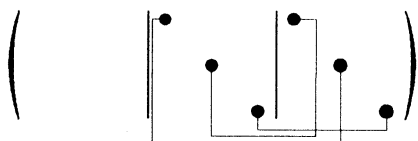


There are 6 independent components.

1.1.4.8.5.6. Group  $\bar{4}2m$

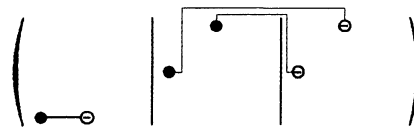
One combines either the reductions for groups  $\bar{4}$  and 222, or the reductions for groups 4 and 2mm.

(i) Twofold axis parallel to  $Ox_1$ :



There are 6 independent components.

(ii) Mirror perpendicular to  $Ox_1$  (the twofold axis is at  $45^\circ$ )



The number of independent components is of course the same, 6.

1.1.4.8.5.7. Group 4/mmm

All the components are equal to zero.

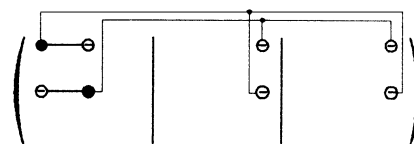
1.1.4.8.6. Hexagonal and cylindrical systems

1.1.4.8.6.1. Groups 6,  $A_\infty$ , 622,  $A_\infty \infty A_2$ , 6mm and  $A_\infty \infty M$

It was shown in Section 1.1.4.6.2.3 that, in the case of tensors of rank 3, the reduction is the same for axes of order 4, 6 or higher. The reduction will then be the same as for the tetragonal system.

1.1.4.8.6.2. Group  $\bar{6} = 3/m$

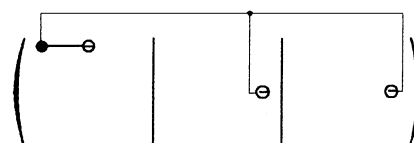
One combines the reductions for the groups corresponding to a threefold axis parallel to  $Ox_3$  and to a mirror perpendicular to  $Ox_3$ :



There are 2 independent components.

1.1.4.8.6.3. Group  $\bar{6}2m$

One combines the reductions for groups 6 and 2mm:



There is 1 independent component.

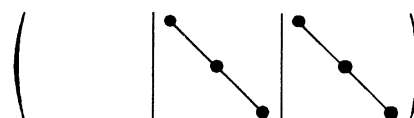
1.1.4.8.6.4. Groups 6/m,  $(A_\infty/M)C$ , 6/mmm and  $(A_\infty/M) \infty (A_2/M)C$

All the components are equal to zero.

1.1.4.8.7. Cubic and spherical systems

1.1.4.8.7.1. Group 23

One combines the reductions corresponding to a twofold axis parallel to  $Ox_3$  and to a threefold axis parallel to [111]:



There are 2 independent components.