

## 2.4. BRILLOUIN SCATTERING

 Table 2.4.5.9. Cubic Laue classes  $C_1$  and  $C_2$ : transverse modes, backscattering

This table, written for the class  $C_2$ , is also valid for the class  $C_1$  with the additional relation  $p_{12} = p_{13}$ . It can also be used for the spherical system where  $c_{44} = \frac{1}{2}(c_{11} - c_{12})$ ,  $p_{44} = \frac{1}{2}(p_{11} - p_{12})$ .

$\hat{\mathbf{Q}}$	$\hat{\mathbf{u}}$	$C$	$\mathbf{e}$	$\mathbf{e}'$	$\beta$
$(1, 1, 0)/\sqrt{2}$	$(1, -1, 0)/\sqrt{2}$	$\frac{1}{3}(c_{11} - c_{12})$	$(0, 0, 1)$	$(0, 0, 1)$	$(p_{12} - p_{13})^2/2(c_{11} - c_{12})$
$(1, 1, 1)/\sqrt{3}$	$D$	$\frac{1}{3}(c_{11} - c_{12} + c_{44})$	$(1, 1, -2)/\sqrt{6}$	$(1, -1, 0)/\sqrt{2}$	$[3(p_{12} - p_{13})^2 + (p_{12} + p_{13} + 4p_{44} - 2p_{11})^2]/72C$

 Table 2.4.5.10. Tetragonal  $T_1$  and hexagonal  $H_1$  Laue classes: transverse modes, backscattering

This table, written for the class  $T_1$ , is also valid for the class  $H_1$  with the additional relations  $c_{66} = \frac{1}{2}(c_{11} - c_{12})$ ;  $p_{66} = \frac{1}{2}(p_{11} - p_{12})$ .

$\hat{\mathbf{Q}}$	$\hat{\mathbf{u}}$	$C$	$\mathbf{e}$	$\mathbf{e}'$	$\beta$
$(0, 1, 1)/\sqrt{2}$	$(1, 0, 0)$	$\frac{1}{2}(c_{44} + c_{66})$	$(1, 0, 0)$	$(0, 1, -1)/\sqrt{2}$	$[(n_1^2 + n_3^2)^2/16n_1^4n_3^4C](n_1^2p_{66} - n_3^2p'_{44})^2$

 Table 2.4.5.11. Hexagonal Laue class  $H_2$ : transverse modes, backscattering

$c_{66} = \frac{1}{2}(c_{11} - c_{12})$ ;  $p_{66} = \frac{1}{2}(p_{11} - p_{12})$ .

$\hat{\mathbf{Q}}$	$\hat{\mathbf{u}}$	$C$	$\mathbf{e}$	$\mathbf{e}'$	$\beta$
$(1, 0, 0)$	$(0, 1, 0)$	$c_{66}$	$(0, 1, 0)$	$(0, 1, 0)$	$p_{16}^2/c_{66}$
$(1, 0, 0)$	$(0, 0, 1)$	$c_{44}$	$(0, 1, 0)$	$(0, 0, 1)$	$p_{45}^2/c_{44}$
$(0, 1, 1)/\sqrt{2}$	$(1, 0, 0)$	$\frac{1}{2}(c_{44} + c_{66})$	$(1, 0, 0)$	$(1, 0, 0)$	$p_{16}^2/(c_{44} + c_{66})$
$(0, 1, 1)/\sqrt{2}$	$(1, 0, 0)$	$\frac{1}{2}(c_{44} + c_{66})$	$(1, 0, 0)$	$(0, 1, -1)/\sqrt{2}$	$[(n_1^2 + n_3^2)^2/16n_1^4n_3^4C](n_1^2p_{66} - n_3^2p'_{44})^2$

 Table 2.4.5.12. Tetragonal Laue class  $T_2$ : transverse modes, backscattering

$\hat{\mathbf{Q}}$	$\hat{\mathbf{u}}$	$C$	$\mathbf{e}$	$\mathbf{e}'$	$\beta$
$(1, 0, 0)$	$(0, 0, 1)$	$c_{44}$	$(0, 1, 0)$	$(0, 0, 1)$	$p_{35}^2/c_{44}$
$(1, 1, 0)/\sqrt{2}$	$(0, 0, 1)$	$c_{44}$	$(0, 0, 1)$	$(1, -1, 0)/\sqrt{2}$	$p_{35}^2/c_{44}$

 Table 2.4.5.13. Orthorhombic Laue class  $O$ : transverse modes, backscattering

$\hat{\mathbf{Q}}$	$\hat{\mathbf{u}}$	$C$	$\mathbf{e}$	$\mathbf{e}'$	$\beta$
$(1, 1, 0)/\sqrt{2}$	$(0, 0, 1)$	$\frac{1}{2}(c_{44} + c_{55})$	$(0, 0, 1)$	$(1, -1, 0)/\sqrt{2}$	$[(n_1^2 + n_2^2)^2/16n_1^4n_2^4C](n_1^2p'_{55} - n_2^2p'_{44})^2$
$(0, 1, 1)/\sqrt{2}$	$(1, 0, 0)$	$\frac{1}{2}(c_{55} + c_{66})$	$(1, 0, 0)$	$(0, 1, -1)/\sqrt{2}$	$[(n_2^2 + n_3^2)^2/16n_2^4n_3^4C](n_2^2p'_{66} - n_3^2p'_{55})^2$
$(1, 0, 1)/\sqrt{2}$	$(0, 1, 0)$	$\frac{1}{2}(c_{44} + c_{66})$	$(0, 1, 0)$	$(-1, 0, 1)/\sqrt{2}$	$[(n_1^2 + n_3^2)^2/16n_1^4n_3^4C](n_3^2p'_{44} - n_1^2p'_{66})^2$

 Table 2.4.5.14. Trigonal Laue class  $R_1$ : transverse modes, backscattering

$c_{66} = \frac{1}{2}(c_{11} - c_{12})$ ;  $p_{66} = \frac{1}{2}(p_{11} - p_{12})$ .

$\hat{\mathbf{Q}}$	$\hat{\mathbf{u}}$	$C$	$\mathbf{e}$	$\mathbf{e}'$	$\beta$
$(0, 1, 0)$	$(1, 0, 0)$	$c_{66}$	$(0, 0, 1)$	$(1, 0, 0)$	$p_{41}^2/c_{66}$
$(0, 0, 1)$	$D$	$c_{44}$	$(1, 0, 0)$	$(1, 0, 0)$	$p_{14}^2/c_{44}$
$(0, 0, 1)$	$D$	$c_{44}$	$(0, 1, 0)$	$(1, 0, 0)$	$p_{14}^2/c_{44}$
$(0, 1, 1)/\sqrt{2}$	$(1, 0, 0)$	$\frac{1}{2}(c_{44} + c_{66}) + c_{14}$	$(1, 0, 0)$	$(0, 1, -1)/\sqrt{2}$	$[(n_1^2 + n_3^2)^2/16n_1^4n_3^4C](n_1^2(p_{66} + p_{14}) - n_3^2(p'_{44} + p_{41}))^2$
$(0, 1, -1)/\sqrt{2}$	$(1, 0, 0)$	$\frac{1}{2}(c_{44} + c_{66}) - c_{14}$	$(1, 0, 0)$	$(0, 1, 1)/\sqrt{2}$	$[(n_1^2 + n_3^2)^2/16n_1^4n_3^4C](n_1^2(p_{66} - p_{14}) + n_3^2(p_{41} - p'_{44}))^2$

 Table 2.4.5.15. Trigonal Laue class  $R_2$ : transverse modes, backscattering

$\hat{\mathbf{Q}}$	$\hat{\mathbf{u}}$	$C$	$\mathbf{e}$	$\mathbf{e}'$	$\beta$
$(0, 0, 1)$	$D$	$c_{44}$	$(1, 0, 0)$	$(1, 0, 0)$	$(p_{14}^2 + p_{15}^2)/c_{44}$
$(0, 0, 1)$	$D$	$c_{44}$	$(0, 1, 0)$	$(1, 0, 0)$	$(p_{14}^2 + p_{15}^2)/c_{44}$