Table 2.4.5.21. *Trigonal Laue class R_1: transverse modes, right-angle scattering*

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

$\hat{\mathbf{Q}}$	$\hat{\mathbf{u}}$	C	Scattering plane	$\mathbf{e}$	$\mathbf{e}'$	β
(0, 1, 0)	(1, 0, 0)	c_{66}	(100)	(1, 0, 0)	$(0, q_2^{(3)}, q_3^{(3)})$	$\{[(n_3 q_2^{(3)})^2 + (n_1 q_3^{(3)})^2]^2/n_1^4 n_3^4 c_{66}\}(n_1^2 q_2^{(3)} p_{66} + n_3^2 q_3^{(3)} p_{41})^2$
(0, 1, 0)	(1, 0, 0)	c_{66}	(001)	(0, 0, 1)	$(q_1^{(4)}, q_2^{(4)}, 0)$	$(q_1^{(4)} p_{41})^2/c_{66}$
(0, 0, 1)	D	c_{44}	(010)	(0, 1, 0)	(0, 1, 0)	p_{14}^2/c_{44}
(0, 0, 1)	D	c_{44}	(010)	(0, 1, 0)	$(q_1^{(5)}, 0, q_3^{(5)})$	$\{[(n_3 q_1^{(5)})^2 + (n_1 q_3^{(5)})^2]^2/n_1^4 n_3^4 c_{44}\}[n_1^4 (q_1^{(5)} p_{14})^2 + n_3^4 (q_3^{(5)} p'_{44})^2]$
$(0, 1, 1)/\sqrt{2}$	(1, 0, 0)	$\frac{1}{2}(c_{44} + c_{66}) + c_{14}$	(100)	(1, 0, 0)	(0, 1, 0)	$(p_{66} + p_{14})^2/2C$
$(0, -1, 1)/\sqrt{2}$	(1, 0, 0)	$\frac{1}{2}(c_{44} + c_{66}) - c_{14}$	(100)	(1, 0, 0)	(0, 1, 0)	$(p_{66} - p_{14})^2/2C$

Table 2.4.5.22. *Trigonal Laue class R_2: transverse modes, right-angle scattering*

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

$\hat{\mathbf{Q}}$	$\hat{\mathbf{u}}$	C	Scattering plane	$\mathbf{e}$	$\mathbf{e}'$	β
(0, 0, 1)	D	c_{44}	(010)	(0, 1, 0)	(0, 1, 0)	p_{14}^2/c_{44}
(0, 0, 1)	D	c_{44}	(010)	(0, 1, 0)	$(q_1^{(5)}, 0, q_3^{(5)})$	$\{[(n_3 q_1^{(5)})^2 + (n_1 q_3^{(5)})^2]^2/n_1^4 n_3^4 c_{44}\}[n_1^4 (q_1^{(5)} p_{14})^2 + n_3^4 (q_3^{(5)} p'_{44})^2]$

Table 2.4.5.23. *Particular directions of incident light used in Tables 2.4.5.17 to 2.4.5.22*

$\varepsilon_1 = (n_2 + n_3 - 2n_1)/4n_1$, $\varepsilon_2 = (n_1 + n_3 - 2n_2)/4n_2$, $\varepsilon_3 = (n_1 + n_2 - 2n_3)/4n_3$.

Notation	q_1	q_2	q_3
$\mathbf{q}^{(1)}$	$-2^{(-1/2)}(1 - \varepsilon_3)$	$2^{(-1/2)}(1 + \varepsilon_3)$	0
$\mathbf{q}^{(2)}$	$-2^{(-1/2)}(1 - \varepsilon_2)$	0	$2^{(-1/2)}(1 + \varepsilon_2)$
$\mathbf{q}^{(3)}$	0	$-2^{(-1/2)}(1 - \varepsilon_1)$	$2^{(-1/2)}(1 + \varepsilon_1)$
$\mathbf{q}^{(4)}$	$2^{(-1/2)}(1 + \varepsilon_3)$	$-2^{(-1/2)}(1 - \varepsilon_3)$	0
$\mathbf{q}^{(5)}$	$2^{(-1/2)}(1 + \varepsilon_2)$	0	$-2^{(-1/2)}(1 + \varepsilon_2)$
$\mathbf{q}^{(6)}$	0	$2^{(-1/2)}(1 + \varepsilon_1)$	$-2^{(-1/2)}(1 - \varepsilon_1)$
$\mathbf{q}^{(7)}$	$-2^{(-1/2)}(n_1 + n_3)(n_1^2 + n_3^2)^{(-1/2)}$	$2^{(-1/2)}(n_1 - n_3)(n_1^2 + n_3^2)^{(-1/2)}$	0
$\mathbf{q}^{(8)}$	0	$-2^{(-1/2)}(n_1 + n_2)(n_1^2 + n_2^2)^{(-1/2)}$	$2^{(-1/2)}(n_2 - n_1)(n_1^2 + n_2^2)^{(-1/2)}$
$\mathbf{q}^{(9)}$	$2^{(-1/2)}(n_3 - n_2)(n_2^2 + n_3^2)^{(-1/2)}$	0	$-2^{(-1/2)}(n_2 + n_3)(n_2^2 + n_3^2)^{(-1/2)}$
$\mathbf{q}^{(10)}$	$-\frac{1}{2}(1 - \varepsilon_2)$	$-\frac{1}{2}(1 - \varepsilon_2)$	$2^{(-1/2)}(1 + \varepsilon_2)$

optical setup, the collection and acceptance angles of the instruments, spurious reflections and spurious interferences, *etc*. A full list is too long to be given here. However, when properly executed, interferometry is a fine tool, the performance of which is unequalled in its frequency range.

References

Benedek, G. & Fritsch, K. (1966). *Brillouin scattering in cubic crystals. Phys. Rev.* **149**, 647–662.

Born, M. & Wolf, E. (1993). *Principles of optics.* Sixth corrected edition. Oxford: Pergamon Press. Reissued (1999) by Cambridge University Press.

Brillouin, L. (1922). *Diffusion de la lumière et des rayons X par un corps transparent homogène. Influence de l'agitation thermique. Ann. Phys. Paris*, **17**, 88–122.

Cecchi, L. (1964). *Etude interférométrique de la diffusion Rayleigh dans les cristaux – diffusion Brillouin.* Doctoral Thesis, University of Montpellier.

Chantrel, H. (1959). *Spectromètres interférentiels à un et deux étalons de Fabry–Perot. J. Rech. CNRS*, **46**, 17–33.

Connes, P. (1958). *L'étalon de Fabry–Perot sphérique. J. Phys. Radium*, **19**, 262–269.

Cummins, H. Z. & Schoen, P. E. (1972). *Linear scattering from thermal fluctuations.* In *Laser handbook*, Vol. 2, edited by F. T. Arecchi & E. O. Schulz-Dubois, pp. 1029–1075. Amsterdam: North-Holland.

Egelstaff, P. A., Kearley, G., Suck, J.-B. & Youden, J. P. A. (1989). *Neutron Brillouin scattering in dense nitrogen gas. Europhys. Lett.* **10**, 37–42.

Friedel, G. (1913). *Sur les symétries cristallines que peut révéler la diffraction des rayons Röntgen. C. R. Acad. Sci. Paris*, **157**, 1533–1536.

Gornall, W. S. & Stoicheff, B. P. (1970). *The Brillouin spectrum and elastic constants of xenon single crystals. Solid State Commun.* **8**, 1529–1533.

Gross, E. (1930*a*). *Change of wave-length of light due to elastic heat waves at scattering in liquids. Nature (London)*, **126**, 201–202.

Gross, E. (1930*b*). *The splitting of spectral lines at scattering of light by liquids. Nature (London)*, **126**, 400.

Hariharan, P. & Sen, J. (1961). *Double-passed Fabry–Perot interferometer. J. Opt. Soc. Am.* **51**, 398–399.

Hayes, W. & Loudon, R. (1978). *Scattering of light by crystals.* New York: Wiley.

Hercher, M. (1968). *The spherical mirror Fabry–Perot interferometer. Appl. Opt.* **7**, 951–966.

Mach, J. E., McNutt, D. P., Roessler, F. L. & Chabbal, R. (1963). *The PEPSIOS purely interferometric high-resolution scanning spectrometer. I. The pilot model. Appl. Opt.* **2**, 873–885.

Nelson, D. F. & Lax, M. (1971). *Theory of photoelastic interaction. Phys. Rev. B*, **3**, 2778–2794.

Nelson, D. F., Lazay, P. D. & Lax, M. (1972). *Brillouin scattering in anisotropic media: calcite. Phys. Rev. B*, **6**, 3109–3120.

Pine, A. S. (1972). *Thermal Brillouin scattering in cadmium sulfide: velocity and attenuation of sound; acoustoelectric effects. Phys. Rev. B*, **5**, 2997–3003.

Sandercock, J. R. (1971). *The design and use of a stabilised multipassed interferometer of high contrast ratio.* In *Light scattering in solids*, edited by M. Balkanski, pp. 9–12. Paris: Flammarion.

Sandercock, J. R. (1982). *Trends in Brillouin scattering: studies of opaque materials, supported films, and central modes.* In *Light scattering in solids III. Topics in appied physics*, Vol. 51, edited by M. Cardona & G. Güntherodt, pp. 173–206. Berlin: Springer.

Sette, F., Krisch, M. H., Masciovecchio, C., Ruocco, G. & Monaco, G. (1998). *Dynamics of glasses and glass-forming liquids studied by inelastic X-ray scattering. Science*, **280**, 1550–1555.

Sussner, H. & Vacher, R. (1979). *High-precision measurements of Brillouin scattering frequencies. Appl. Opt.* **18**, 3815–3818.

Vacher, R. (1972). *Contribution à l'étude de la dynamique du réseau cristallin par analyse du spectre de diffusion Brillouin.* Doctoral Thesis, University of Montpellier II.

Vacher, R. & Boyer, L. (1972). *Brillouin scattering: a tool for the measurement of elastic and photoelastic constants. Phys. Rev. B*, **6**, 639–673.

Copyright © 2006 International Union of Crystallography