Table 1. *N-beam interactions*; [030] *benzil*; Cr $K\alpha_1$

Peak no.	θ	Number of beams	I/O	R/L	Sign	r.l.p.	coupling
				Experimental		Indices	
1	55·62	4	I	R	+	$\bar{1}1\bar{2}$	122
						$\bar{1}32$	102
2	54·94	4	I	L	−	$02\bar{1}$	011
						$01\bar{1}$	021
3	43·91	3	O	R	−	111	$\bar{1}2\bar{1}$
4	30·97	6	I	R	+	(indices omitted)	
5	30·76	4	O	R	−	$0\bar{1}2$	$04\bar{2}$
						042	$0\bar{1}\bar{2}$
6	79·05	4	I	R	+	$\bar{1}4\bar{2}$	$1\bar{1}2$
						$\bar{1}0\bar{2}$	$1\bar{3}2$
7	53·61	3	O	R	−	112	$\bar{1}2\bar{2}$
8	35·94	4	I	L	−	$\bar{2}1\bar{1}$	221
						$\bar{2}4\bar{1}$	$2\bar{1}1$

the corresponding reciprocal-lattice point (r.l.p.) is entering or leaving the Ewald sphere; under 'R/L' we indicate the location of the intensity minimum, to the right or left of the interaction maximum; the experimentally determined sign of the invariant phase is given in the adjacent column. The indices of the r.l.p.s and their coupling terms are given in the last column.

It is clear that abundant useful *n*-beam data for benzil and similar crystals can be recorded with Cu $K\alpha_1$, Cr $K\alpha_1$ and other radiations. [A detailed study of experimental determinations of the signs of invariant benzil phases has been prepared by one of the authors (BP) for submission to *Acta Cryst*. Section A.] It should also be clear that failure to observe an experimental effect may be due to factors other than the total absence of the effect.

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On integrating the techniques of direct methods with anomalous dispersion: the one-phase structure seminvariants in the monoclinic and orthorhombic systems. III. Primitive non-centrosymmetric space groups of type 1P220.

By D. VELMURUGAN* and HERBERT A. HAUPTMAN, *Medical Foundation of Buffalo, Inc., 73 High Street, Buffalo, New York 14203-1196, USA*

Abstract

In a recent paper by Velmurugan & Hauptman [*Acta Cryst.* (1989), A45, 158–163], conditional probability distributions were derived for the one-phase structure seminvariants in the presence of anomalous scattering for the monoclinic system and for the space groups of type 1P222 in the orthorhombic system. This paper is an extension of the above paper for the primitive non-centrosymmetric space groups of type 1P220 in the orthorhombic system. The one-phase structure seminvariants are of the form $\Phi_{2h'2k'0}$. Since the theory for this case was treated in the earlier paper, only a brief summary of results is given here.

Summary of final results

Ten space groups (Table 1) fall in the category 1P220. For the derivation of the conditional probability distributions for the one-phase structure seminvariants $\Phi_{2h'k'0}$ in this category the reader is referred to Velmurugan & Hauptman

Table 1. *P values for the ten space groups of type* 1P220

Space group	P
Pmm2	1
Pmc2₁	$(-1)^l$
Pcc2	1
Pma2	1
Pca2₁	$(-1)^l$
Pnc2	1
Pmn2₁	$(-1)^{l+h}$
Pba2	1
Pna2₁	$(-1)^l$
Pnn2	1

(1989), in particular § 5.2 and column 2 of Table 1. The relevant P values for the ten space groups are listed in Table 1 below. With equations (9.3) of the earlier paper and the new P values for these ten space groups, the corresponding conditional probability distributions can be obtained from equation (9.1).

* Permanent address: Department of Crystallography and Biophysics, University of Madras, Guindy Campus, Madras-600 025, India.

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