Cubic   6. SCANNING TABLES   Laue class $O_h - m\bar{3}m$

No. 210 $F4_132$ O^4

$$\mathcal{G} = F4_132$$

Orientation orbit (*hkl*)	Conventional basis of the scanning group **a′**	**b′**	**d**	Scanning group $\mathcal{H}$	Linear orbit $s\mathbf{d}$	Sectional layer group $\mathcal{L}(s\mathbf{d})$	
(001)	$(\mathbf{a}-\mathbf{b})/2$	$(\mathbf{a}+\mathbf{b})/2$	$\mathbf{c}$	$I4_122$	$[0\mathbf{d}, \frac{1}{2}\mathbf{d};$	$\widehat{c}222$	L22
(100)	$(\mathbf{b}-\mathbf{c})/2$	$(\mathbf{b}+\mathbf{c})/2$	$\mathbf{a}$		$\frac{1}{4}\mathbf{d}, \frac{3}{4}\mathbf{d}]$	$\widehat{c}222$ ($\mathbf{a}'/2$ or $\mathbf{b}'/2$)	L22
(010)	$(\mathbf{c}-\mathbf{a})/2$	$(\mathbf{c}+\mathbf{a})/2$	$\mathbf{b}$		$[\frac{1}{8}\mathbf{d}, \frac{5}{8}\mathbf{d};$	$p22_12$	L20
					$\frac{3}{8}\mathbf{d}, \frac{7}{8}\mathbf{d}]$	$p2_122$	L20
					$[\pm s\mathbf{d}, (\pm s + \frac{1}{4})\mathbf{d},$		
					$(\pm s + \frac{1}{2})\mathbf{d}, (\pm s + \frac{3}{4})\mathbf{d}]$	$p112$	L03
(110)	$\mathbf{c}$	$(\mathbf{a}-\mathbf{b})/2$	$(\mathbf{a}+\mathbf{b})/2$	$I2_12_12_1$	$[0\mathbf{d}, \frac{1}{2}\mathbf{d}]$	$p22_12$ ($3\mathbf{a}'/8+\mathbf{b}'/4$)	L20
(011)	$\mathbf{a}$	$(\mathbf{b}-\mathbf{c})/2$	$(\mathbf{b}+\mathbf{c})/2$	$(3\mathbf{a}'/8 + \mathbf{d}/4)$	$[\frac{1}{4}\mathbf{d}, \frac{3}{4}\mathbf{d}]$	$p2_122$ ($3\mathbf{a}'/8+\mathbf{b}'/4$)	L20
(101)	$\mathbf{b}$	$(\mathbf{c}-\mathbf{a})/2$	$(\mathbf{c}+\mathbf{a})/2$		$[\pm s\mathbf{d}, (\pm s + \frac{1}{2})\mathbf{d}]$	$p112$ ($3\mathbf{a}'/8 + \mathbf{b}'/4$)	L03
(1$\bar{1}$0)	$\mathbf{c}$	$(\mathbf{a}+\mathbf{b})/2$	$(\mathbf{b}-\mathbf{a})/2$	$I2_12_12_1$	$[0\mathbf{d}, \frac{1}{2}\mathbf{d}]$	$p22_12$ ($\mathbf{a}'/8 + \mathbf{b}'/4$)	L20
(01$\bar{1}$)	$\mathbf{a}$	$(\mathbf{b}+\mathbf{c})/2$	$(\mathbf{c}-\mathbf{b})/2$	$(\mathbf{a}'/8 + \mathbf{d}/4)$	$[\frac{1}{4}\mathbf{d}, \frac{3}{4}\mathbf{d}]$	$p2_122$ ($\mathbf{a}'/8 + \mathbf{b}'/4$)	L20
($\bar{1}$01)	$\mathbf{b}$	$(\mathbf{c}+\mathbf{a})/2$	$(\mathbf{a}-\mathbf{c})/2$		$[\pm s\mathbf{d}, (\pm s + \frac{1}{2})\mathbf{d}]$	$p112$ ($\mathbf{a}'/8 + \mathbf{b}'/4$)	L03
(111)	$(\mathbf{a}-\mathbf{c})/2$	$(\mathbf{b}-\mathbf{a})/2$	τ	$R32$	$[\frac{1}{8}\mathbf{d}, \quad [\frac{5}{8}\mathbf{d},$	$p321$	L68
($\bar{1}\bar{1}$1)	$(-\mathbf{a}-\mathbf{c})/2$	$(\mathbf{a}-\mathbf{b})/2$	τ_3	$(\mathbf{d}/8)$	$\frac{11}{24}\mathbf{d}, \parallel \frac{23}{24}\mathbf{d},$	$p321$ [$(2\mathbf{a}'+\mathbf{b}')/3$]	L68
(1$\bar{1}\bar{1}$)	$(\mathbf{a}+\mathbf{c})/2$	$(-\mathbf{a}-\mathbf{b})/2$	τ_1		$\frac{19}{24}\mathbf{d}] \quad \frac{7}{24}\mathbf{d}]$	$p321$ [$(\mathbf{a}'+2\mathbf{b}')/3$]	L68
($\bar{1}1\bar{1}$)	$(\mathbf{c}-\mathbf{a})/2$	$(\mathbf{a}+\mathbf{b})/2$	τ_2		$[(\pm s + \frac{1}{8})\mathbf{d}, (\pm s + \frac{1}{3})\mathbf{d},$		
					$(\pm s + \frac{19}{24})\mathbf{d}]$	$p3$	L65

No. 211 $I432$ O^5

$$\mathcal{G} = I432$$

Orientation orbit (*hkl*)	Conventional basis of the scanning group **a′**	**b′**	**d**	Scanning group $\mathcal{H}$	Linear orbit $s\mathbf{d}$	Sectional layer group $\mathcal{L}(s\mathbf{d})$	
(001)	$\mathbf{a}$	$\mathbf{b}$	$\mathbf{c}$	$I422$	$[0\mathbf{d}, \frac{1}{2}\mathbf{d}]$	$p422$	L53
(100)	$\mathbf{b}$	$\mathbf{c}$	$\mathbf{a}$		$[\frac{1}{4}\mathbf{d}, \frac{3}{4}\mathbf{d}]$	$p42_12$	L54
(010)	$\mathbf{c}$	$\mathbf{a}$	$\mathbf{b}$		$[\pm s\mathbf{d}, (\pm s + \frac{1}{2})\mathbf{d}]$	$p4$	L49
(110)	$\mathbf{c}$	$\mathbf{a}-\mathbf{b}$	$\mathbf{a}+\mathbf{b}$	$F222$	$[0\mathbf{d}, \frac{1}{2}\mathbf{d}]$	$c222$	L22
(1$\bar{1}$0)	$\mathbf{c}$	$\mathbf{a}+\mathbf{b}$	$\mathbf{b}-\mathbf{a}$		$[\frac{1}{4}\mathbf{d}, \frac{3}{4}\mathbf{d}]$	$c222$ [$(\mathbf{a}' + \mathbf{b}')/4$]	L22
(011)	$\mathbf{a}$	$\mathbf{b}-\mathbf{c}$	$\mathbf{b}+\mathbf{c}$		$[\pm s\mathbf{d}, (\pm s + \frac{1}{2})\mathbf{d}]$	$\widehat{p}112$	L03
(01$\bar{1}$)	$\mathbf{a}$	$\mathbf{b}+\mathbf{c}$	$\mathbf{c}-\mathbf{b}$				
(101)	$\mathbf{b}$	$\mathbf{c}-\mathbf{a}$	$\mathbf{c}+\mathbf{a}$				
($\bar{1}$01)	$\mathbf{b}$	$\mathbf{c}+\mathbf{a}$	$\mathbf{a}-\mathbf{c}$				
(111)	$\mathbf{a}-\mathbf{c}$	$\mathbf{b}-\mathbf{a}$	$\tau/2$	$R32$	$[0\mathbf{d}, \quad [\frac{1}{3}\mathbf{d},$	$p321$	L68
($\bar{1}\bar{1}$1)	$-\mathbf{a}-\mathbf{c}$	$\mathbf{a}-\mathbf{b}$	$\tau_3/2$		$\frac{1}{3}\mathbf{d}, \parallel \frac{5}{6}\mathbf{d},$	$p321$ [$(2\mathbf{a}'+\mathbf{b}')/3$]	L68
(1$\bar{1}\bar{1}$)	$\mathbf{a}+\mathbf{c}$	$-\mathbf{a}-\mathbf{b}$	$\tau_1/2$		$\frac{2}{3}\mathbf{d}] \quad \frac{1}{6}\mathbf{d}]$	$p321$ [$(\mathbf{a}'+2\mathbf{b}')/3$]	L68
($\bar{1}1\bar{1}$)	$\mathbf{c}-\mathbf{a}$	$\mathbf{a}+\mathbf{b}$	$\tau_2/2$		$[\pm s\mathbf{d}, (\pm s + \frac{1}{3})\mathbf{d}, (\pm s + \frac{2}{3})\mathbf{d}]$	$p3$	L65

Centring type I

Orientation orbit (hkl)	Conventional basis of the scanning group $\mathbf{a}'$	$\mathbf{b}'$	$\mathbf{d}$	Auxiliary basis of the scanning group $\widehat{\mathbf{a}}$	$\widehat{\mathbf{b}}$	$\widehat{\mathbf{c}}$
$(mn0)$	$\mathbf{c}$	$n\mathbf{a} - m\mathbf{b}$	$p\mathbf{a} + q\mathbf{b}$	$\mathbf{a}$	$\mathbf{b}$	$\mathbf{c}$
$(\overline{m}n0)$	$\mathbf{c}$	$n\mathbf{a} + m\mathbf{b}$	$-p\mathbf{a} + q\mathbf{b}$			
$(nm0)$	$\mathbf{c}$	$m\mathbf{a} - n\mathbf{b}$	$q\mathbf{a} + p\mathbf{b}$			
$(\overline{n}m0)$	$\mathbf{c}$	$m\mathbf{a} + n\mathbf{b}$	$-q\mathbf{a} + p\mathbf{b}$			
$(0mn)$	$\mathbf{a}$	$n\mathbf{b} - m\mathbf{c}$	$p\mathbf{b} + q\mathbf{c}$	$\mathbf{b}$	$\mathbf{c}$	$\mathbf{a}$
$(0\overline{m}n)$	$\mathbf{a}$	$n\mathbf{b} + m\mathbf{c}$	$-p\mathbf{b} + q\mathbf{c}$			
$(0nm)$	$\mathbf{a}$	$m\mathbf{b} - n\mathbf{c}$	$q\mathbf{b} + p\mathbf{c}$			
$(0\overline{n}m)$	$\mathbf{a}$	$m\mathbf{b} + n\mathbf{c}$	$-q\mathbf{b} + p\mathbf{c}$			
$(n0m)$	$\mathbf{b}$	$n\mathbf{c} - m\mathbf{a}$	$p\mathbf{c} + q\mathbf{a}$	$\mathbf{c}$	$\mathbf{a}$	$\mathbf{b}$
$(n0\overline{m})$	$\mathbf{b}$	$n\mathbf{c} + m\mathbf{a}$	$-p\mathbf{c} + q\mathbf{a}$			
$(m0n)$	$\mathbf{b}$	$m\mathbf{c} - n\mathbf{a}$	$q\mathbf{c} + p\mathbf{a}$			
$(m0\overline{n})$	$\mathbf{b}$	$m\mathbf{c} + n\mathbf{a}$	$-q\mathbf{c} + p\mathbf{a}$			
(hhl)	$\mathbf{a} - \mathbf{b}$	$n\widehat{\mathbf{a}} - m\mathbf{c}$	$p\widehat{\mathbf{a}} + q\mathbf{c}$	$(\mathbf{a} + \mathbf{b} + \mathbf{c})/2$	$\mathbf{c}$	$\mathbf{a} - \mathbf{b}$
$(\overline{h}hl)$	$\mathbf{a} - \mathbf{b}$	$n\widehat{\mathbf{a}} + m\mathbf{c}$	$-p\widehat{\mathbf{a}} + q\mathbf{c}$			
$(h\overline{h}l)$	$\mathbf{a} + \mathbf{b}$	$n\widehat{\mathbf{a}} - m\mathbf{c}$	$p\widehat{\mathbf{a}} + q\mathbf{c}$	$(\mathbf{b} - \mathbf{a} + \mathbf{c})/2$	$\mathbf{c}$	$\mathbf{a} + \mathbf{b}$
$(\overline{h}hl)$	$\mathbf{a} + \mathbf{b}$	$n\widehat{\mathbf{a}} + m\mathbf{c}$	$-p\widehat{\mathbf{a}} + q\mathbf{c}$			
(lhh)	$\mathbf{b} - \mathbf{c}$	$n\widehat{\mathbf{a}} - m\mathbf{a}$	$p\widehat{\mathbf{a}} + q\mathbf{a}$	$(\mathbf{b} + \mathbf{c} + \mathbf{a})/2$	$\mathbf{a}$	$\mathbf{b} - \mathbf{c}$
$(l\overline{h}h)$	$\mathbf{b} - \mathbf{c}$	$n\widehat{\mathbf{a}} + m\mathbf{a}$	$-p\widehat{\mathbf{a}} + q\mathbf{a}$			
$(lh\overline{h})$	$\mathbf{b} + \mathbf{c}$	$n\widehat{\mathbf{a}} - m\mathbf{a}$	$p\widehat{\mathbf{a}} + q\mathbf{a}$	$(\mathbf{c} - \mathbf{b} + \mathbf{a})/2$	$\mathbf{a}$	$\mathbf{b} + \mathbf{c}$
$(\overline{l}hh)$	$\mathbf{b} + \mathbf{c}$	$n\widehat{\mathbf{a}} + m\mathbf{a}$	$-p\widehat{\mathbf{a}} + q\mathbf{a}$			
(hlh)	$\mathbf{c} - \mathbf{a}$	$n\widehat{\mathbf{a}} - m\mathbf{b}$	$p\widehat{\mathbf{a}} + q\mathbf{b}$	$(\mathbf{c} + \mathbf{a} + \mathbf{b})/2$	$\mathbf{b}$	$\mathbf{c} - \mathbf{a}$
$(hl\overline{h})$	$\mathbf{c} - \mathbf{a}$	$n\widehat{\mathbf{a}} + m\mathbf{b}$	$-p\widehat{\mathbf{a}} + q\mathbf{b}$			
$(\overline{h}lh)$	$\mathbf{c} + \mathbf{a}$	$n\widehat{\mathbf{a}} - m\mathbf{b}$	$p\widehat{\mathbf{a}} + q\mathbf{b}$	$(\mathbf{a} - \mathbf{c} + \mathbf{b})/2$	$\mathbf{b}$	$\mathbf{c} + \mathbf{a}$
$(hl\overline{h})$	$\mathbf{c} + \mathbf{a}$	$n\widehat{\mathbf{a}} + m\mathbf{b}$	$-p\widehat{\mathbf{a}} + q\mathbf{b}$			
l odd $\Rightarrow n = 2l,\, m = 2h + l;\ l$ even $\Rightarrow n = l,\, m = h + l/2$						

Arithmetic classes 432I, $\overline{4}3mI$ and $m\overline{3}mI$

Serial No.	211	214	217	220	229	230
Group type	O^5	O^8	T_d^3	T_d^6	O_h^9	O_h^{10}
Group	$I432$	$I4_132$	$I\overline{4}3m$	$I\overline{4}3d$	$Im\overline{3}m$	$Ia\overline{3}d$
$(mn0)$	$I112$	$I112$	$I112$	$I112$	$I112/m$	$I112/b$
$(\overline{m}n0)$		$(\mathbf{b}/4)$		$(\mathbf{b}/4)$		
$(nm0)$						
$(\overline{n}m0)$						
$(0mn)$		$I112$		$I112$		
$(0\overline{m}n)$		$(\mathbf{c}/4)$		$(\mathbf{c}/4)$		
$(0nm)$						
$(0\overline{n}m)$						
$(n0m)$		$I112$		$I112$		
$(n0\overline{m})$		$(\mathbf{a}/4)$		$(\mathbf{a}/4)$		
$(m0n)$						
$(m0\overline{n})$						
(hhl)	$B112$	$B112$	$B11m$	$B11b$	$B112/m$	$B112/b$
$(\overline{h}hl)$		$(\mathbf{a}+\mathbf{c})/8$				
$(h\overline{h}l)$		$B112$				
$(\overline{h}hl)$		$3(\mathbf{a}+\mathbf{c})/8$				
(lhh)		$B112$				
$(\overline{l}h\overline{h})$		$(\mathbf{b}+\mathbf{a})/8$				
$(lh\overline{h})$		$B112$				
$(\overline{l}hh)$		$3(\mathbf{b}+\mathbf{a})/8$				
(hlh)		$B112$				
$(\overline{h}l\overline{h})$		$(\mathbf{c}+\mathbf{b})/8$				
$(\overline{h}lh)$		$B112$				
$(hl\overline{h})$		$3(\mathbf{c}+\mathbf{b})/8$				