Calculations and formula referenced as 'crystallographic least squares'

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$$A(hkl)=\sum_{1}^{N} f_i \cos 2\pi(hx_i+ky_i+lz_i)$$

$$B(hkl)=\sum_{1}^{N} f_i \sin 2\pi(hx_i+ky_i+lz_i)$$

$$F(hkl)=\left\{A^2(hkl)+B^2(hkl)\right\}^{1/2}$$

$$\Phi = \sum \omega_m (oF_m - F_m)^2 = \sum \omega_m \Delta F_m^2$$

$$\mathbf{U}=\left[\Delta u_1\ \Delta u_2 \cdots\cdots \Delta u_N\right]$$

$$\mathbf{P}=\begin{bmatrix} \sqrt{\omega_1}\frac{\partial F_1}{\partial u_1} & \cdots & \sqrt{\omega_M}\frac{\partial F_M}{\partial u_1} \\ \vdots & & \vdots \\ \sqrt{\omega_1}\frac{\partial F_1}{\partial u_N} & \cdots & \sqrt{\omega_M}\frac{\partial F_M}{\partial u_N} \end{bmatrix}$$

$$\mathbf{D}=\left[\sqrt{\omega_1}\Delta F_1 \cdots\cdots \sqrt{\omega_M}\Delta F_M\right]$$

$$\mathbf{U}=\mathbf{D}\mathbf{P}^T(\mathbf{P}^T\mathbf{P})^{-1}$$