1 Equations

$$\boxed{\begin{aligned}\frac{d\sigma}{d\Omega_Z d\Omega_l} = \sum_{\lambda_{ll}\lambda_\gamma} | \sum_{J_{Z\gamma}\lambda_Z\lambda_{qq}} & [2J_{Z\gamma}+1] T^{J_{Z\gamma}}_{\lambda_Z\lambda_\gamma\lambda_{qq}} d^{J_{Z\gamma}}_{\lambda_{Z\gamma}\lambda_{qq}}(\cos\theta_Z) \\ & \otimes A_{\lambda_Z\lambda_{ll}} d^1_{\lambda_Z\lambda_{ll}}(\cos\theta_l) e^{i[\lambda_{qq}\phi_Z - \lambda_Z(\phi_Z+\phi_l)]}|^2\end{aligned}} \tag{1}$$

Equation (1) is described by $fitFunc()$, but in order to construct $-\ln L$, where L is the likelihood it has to be brought to the form:

$$\boxed{W(\Omega) = \sum_n^{N_{par}} A_n \omega_n(\Omega)} \tag{2}$$

For squaring following formulas are used:

If a_i and α_i are real:

$$| \sum_i a_i e^{i\alpha_i\phi_i} |^2 = \sum_i \sum_{j\geqslant i} (2-\delta_{ij}) a_i a_j \cos(\alpha_i\phi_i - \alpha_j\phi_j)$$

in general, helicity amplitudes are complex numbers, so, if $z_i = a_i + ib_i$ and let's also put some x_i real functions in general calculation (which represent the wigner d functions in our distribution):

$$| \sum_i z_i x_i e^{i\alpha_i\phi_i} |^2 = \sum_i \sum_{j\geqslant i} (2-\delta_{ij}) x_i x_j (a_i a_j + b_i b_j) \cos(\alpha_i\phi_i - \alpha_j\phi_j)$$

Which results in

$$\frac{n(n+1)}{2}$$

members of sumation.
Finally we get:

$$\boxed{W(\Omega) = \sum_n^{N_{par}} A_n\omega_n(\Omega) = \sum_{\lambda_\gamma\lambda_{ll}} \sum_i \sum_{j\geqslant i} (2-\delta_{ij}) x_i x_j (a_i a_j + b_i b_j) \cos(\alpha_i\phi_i - \alpha_j\phi_j)}$$

But, this is a lot of members of summation, whereas we have less independent amplitudes, 9 for $A_{\lambda_Z\lambda_{ll}}$ and 32 for $T^J_{\lambda_Z\lambda_\gamma\lambda_{qq}}$.