$$L(t,\theta_1,\theta_2,\varphi,m,I_{cat}) = f_{sig}L_{sig}(t,\theta_1,\theta_2,\varphi,m,I_{cat})+(1-f_{sig})L_{bkg}(t,\theta_1,\theta_2,\varphi,m,I_cat)$$

$$L_{sig}(t,\theta_1,\theta_2,\varphi,m,I_{cat}) = \sum_{n=0}^{6} K_n(t,I_{cat})f_n(\theta_1,\theta_2,\varphi)M_{sig}(m)T_{sig}(t)P_{sig}(\theta_1,\theta_2)$$

$$K_1(t,I_{cat}) = \frac{1}{2}A_0^2[(1+\cos\phi_s)e^{-\Gamma_L t}+(1-\cos\phi_s)e^{-\Gamma_H t}+2I_{cat}(1-2\omega_{mis})e^{-\Gamma_s t}\sin(\Delta m_s t)\sin\phi_s]$$

$$K_2(t,I_{cat}) = \frac{1}{2}A_\parallel^2[(1+\cos\phi_s)e^{-\Gamma_L t}+(1-\cos\phi_s)e^{-\Gamma_H t}+2I_{cat}(1-2\omega_{mis})e^{-\Gamma_s t}\sin(\Delta m_s t)\sin\phi_s]$$

$$K_3(t,I_{cat}) = \frac{1}{2}A_\perp^2[(1-\cos\phi_s)e^{-\Gamma_L t}+(1+\cos\phi_s)e^{-\Gamma_H t}-2I_{cat}(1-2\omega_{mis})e^{-\Gamma_s t}\sin(\Delta m_s t)\sin\phi_s]$$

$$K_4(t,I_{cat}) = |A_\parallel||A_\perp|[I_{cat}(1-2\omega_{mis})e^{-\Gamma_s t}\{\sin\delta_1\cos(\Delta m_s t)-\cos\delta_1\sin(\Delta m_s t)\cos\phi_s\} -\frac{1}{2}(e^{-\Gamma_H t}-e^{-\Gamma_L t})\cos\delta_1\sin\phi_s]$$

$$K_5(t,I_{cat}) = \frac{1}{2}|A_0||A_\parallel|\cos(\delta_1-\delta_2)[(1+\cos\phi_s)e^{-\Gamma_L t}+(1-\cos\phi_s)e^{-\Gamma_H t} +2I_{cat}(1-2\omega_{mis})e^{-\Gamma_s t}\sin(\Delta m_s t)\sin\phi_s]$$

$$K_6(t,I_{cat}) = |A_0||A_\perp|[I_{cat}(1-2\omega_{mis})e^{-\Gamma_s t}\{\sin\delta_2\cos(\Delta m_s t)-\cos\delta_2\sin(\Delta m_s t)\cos\phi_s\} -\frac{1}{2}(e^{-\Gamma_H t}-e^{-\Gamma_L t})\cos\delta_2\sin\phi_s]$$

$$\Gamma_s = \frac{\Gamma_L+\Gamma_H}{2}$$

$$f_1(\theta_1,\theta_2,\varphi) = 4\cos^2\theta_1\cos^2\theta_2$$

$$f_2(\theta_1,\theta_2,\varphi) = \sin^2\theta_1\sin^2\theta_2(1+\cos 2\varphi)$$

$$f_3(\theta_1,\theta_2,\varphi) = \sin^2\theta_1\sin^2\theta_2(1-\cos 2\varphi)$$

$$f_4(\theta_1,\theta_2,\varphi) = -2\sin^2\theta_1\sin^2\theta_2\sin 2\varphi$$

$$f_5(\theta_1,\theta_2,\varphi) = \sqrt{2}\sin 2\theta_1\sin 2\theta_2\cos\varphi$$

$$f_6(\theta_1,\theta_2,\varphi) = -\sqrt{2}\sin 2\theta_1\sin 2\theta_2\sin\varphi$$

$$M_{sig}(m) = f_1 e^{-\frac{(m-M_B)^2}{\sigma_1^2}} + (1-f_1)e^{-\frac{(m-M_B)^2}{\sigma_2^2}}$$

$$T_{sig}(t) = \frac{t^3}{b_{sig}+t^3}$$

$$P_{sig}(\theta_1,\theta_2) = (1+k_1\cos\theta_1+k_2\cos^2\theta_1+k_3\cos^3\theta_1) (1+k_1\cos\theta_2+k_2\cos^2\theta_2+k_3\cos^3\theta_2)$$

$$L_{bkg} = e^{-\Gamma_{bkg}t}e^{-\Gamma_m m}\frac{t^3}{b_{bkg}+t^3}P_{bkg}(\theta_1,\theta_2)$$

$$P_{bkg}(\theta_1,\theta_2) = (1+c_1\cos\theta_1+c_2\cos^2\theta_1+c_3\cos^3\theta_1) (1+c_1\cos\theta_2+c_2\cos^2\theta_2+c_3\cos^3\theta_2)$$

$$f_{sig} = 0.118$$

$$A_0^2 = 0.9$$

$$A_\parallel^2 = 0.095$$

$$A_\perp^2 = 0.095$$

$$\Gamma_L = 0.72\, ps^{-1}$$

$$\Gamma_H = 0.62\, ps^{-1}$$

$$\Delta m_s = 17.0\, ps^{-1}$$

$$\delta_1 = 0$$

$$\delta_2 = 180^o$$

$$\phi_s = 11.45^o$$

$$\omega_{mis} = 0.3$$

$$M_B = 5368.34\, MeV$$

$$f_1 = 0.652668$$

$$\sigma_1 = 13.8599\, MeV$$

$$\sigma_2 = 27.1490\, MeV$$

$$b_{sig} = 0.027\, ps^3$$

$$k_1 = -0.103039$$

$$k_2 = -0.567385$$

$$k_3 = -0.286278$$

$$\Gamma_{bkg} = 1.85\, ps^{-1}$$

$$b_{bkg} = 1.2\ \times\ 10^{-4}\, ps^3$$

$$\Gamma_m = 9.67\ \times\ 10^{-4}\, MeV^{-1}$$

$$c1 = 0.46$$

$$c2 = 0.0$$

$$c3 = -1.44$$