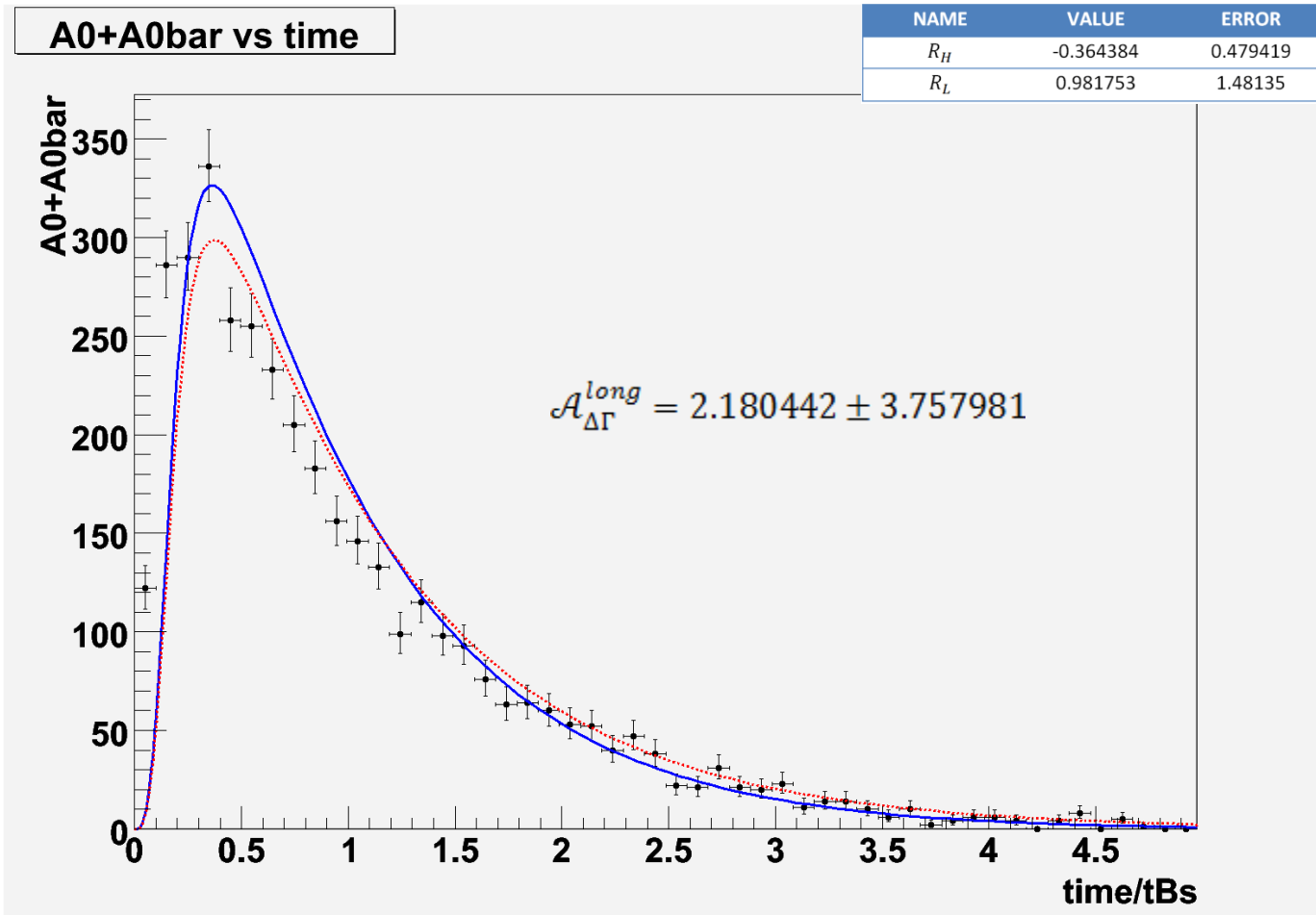


$$B_s \rightarrow K^{*0} \bar{K}^{*0}$$

01/04/09

Reunión Anterior



- Función de ajuste
- Función esperada para $R_H=1-\cos(\phi_s)$ y $R_L=1+\cos(\phi_s)$

Trabajo en curso

- Revisar el código de ajuste
- Realizar una serie de experimentos de control:
 - Aceptancia temporal
 - Resolución temporal
 - Background
 - $\Delta\Gamma/\Gamma_a > 0.15$
 - Distintos valores de ϕ s

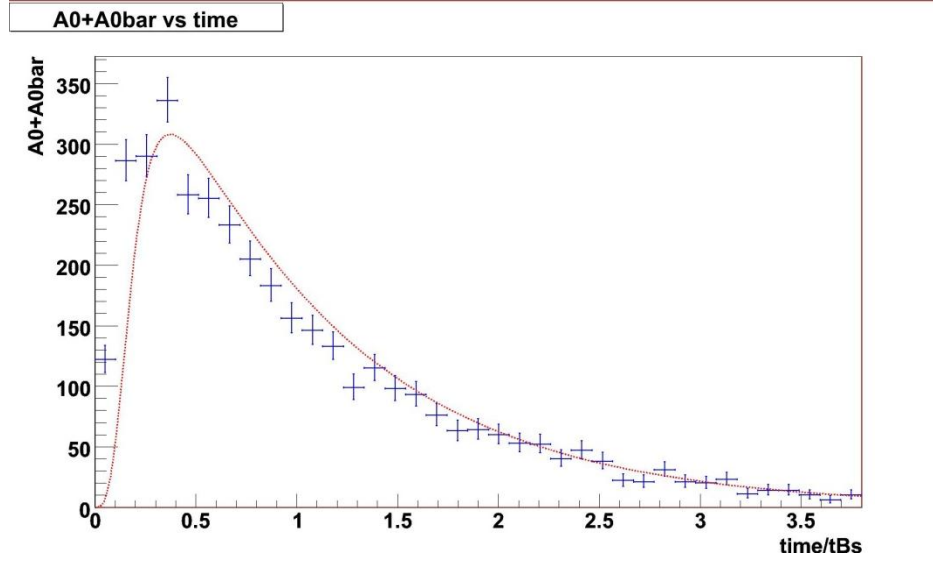
| Parametro | Nombre | Valor |
|--|--------|-------|
| $ A_{\parallel} ^2$ | Rpar | 0.095 |
| $ A_{\perp} ^2$ | Rper | 0.095 |
| δ_1 | delta1 | 0 |
| δ_2 | delta2 | π |
| $\Gamma_a = \frac{\Gamma_L + \Gamma_H}{2}$ | gama | 1.005 |

- Utilizar como parámetros RH y la asimetría.
- Eliminar del fit los intervalos con muy pocos eventos ($N_{\text{cut}} = 5$).

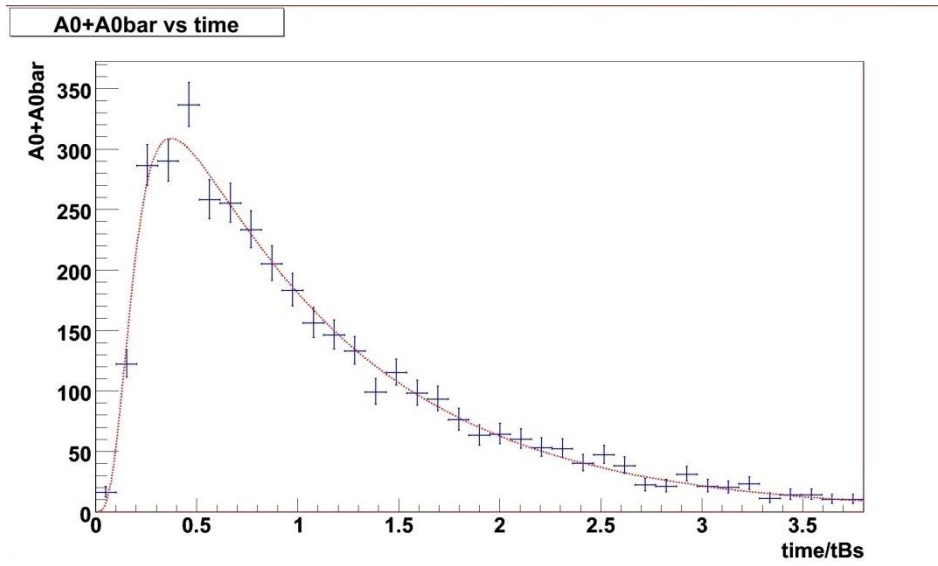
Trabajo en curso

- Falta un bin !!

ANTES



DESPUES



Experimentos de control

- Resultados del fit para distintos experimentos:

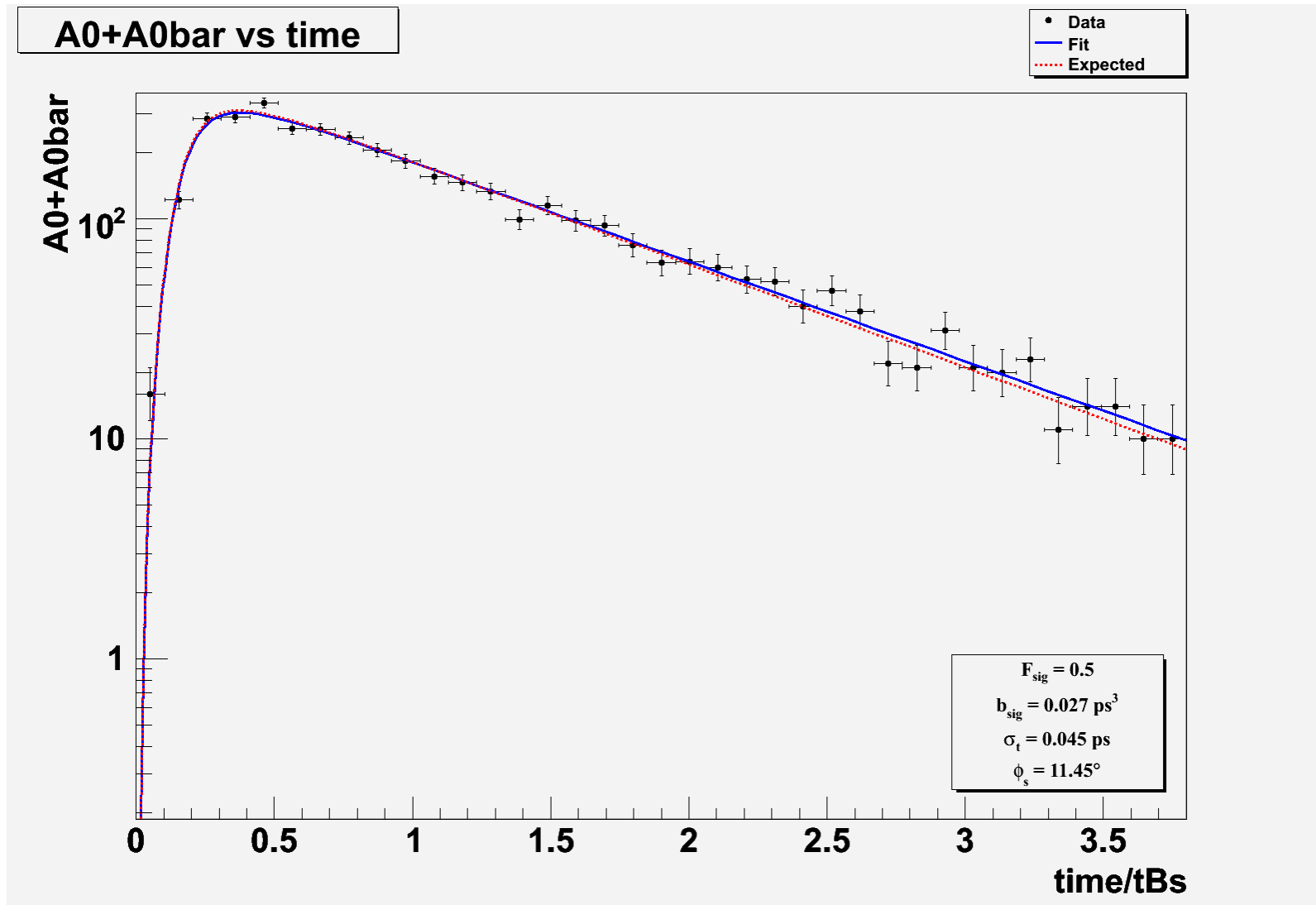
| F_{sig} | $b_{sig} (ps^3)$ | $\sigma_t (ps)$ | $\phi_s (rad)$ | $\Delta\Gamma/\Gamma_s$ | R_L | $s(R_L)$ | $\mathcal{A}_{\Delta\Gamma}^{long}$ | $s(\mathcal{A}_{\Delta\Gamma}^{long})$ |
|-----------|------------------|-----------------|----------------|-------------------------|---------|----------|-------------------------------------|--|
| 1 | 0 | 0 | 0.2 | 0.5 | 1.47102 | 0.734296 | 0.891376 | 0.0359199 |
| 1 | 0 | 0 | 0.2 | 0.15 | 1.50101 | 0.625629 | 0.502577 | 0.164167 |
| 1 | 0.027 | 0 | 0.2 | 0.15 | 1.12074 | 0.692149 | 0.553302 | 0.158472 |
| 1 | 0.027 | 0.045 | 0.2 | 0.15 | 1.49874 | 0.746410 | 0.854004 | 0.142988 |
| 0.5 | 0.027 | 0.045 | 0.2 | 0.15 | 1.49748 | 0.749877 | 0.625711 | 0.245136 |

En ninguno de los casos es compatible el valor de la asimetría con lo que esperamos encontrar:

$$\mathcal{A}_{\Delta\Gamma}^{long} = \frac{R_L - R_H}{R_L + R_H} = \cos \phi_s = 0.98$$

Experimentos de control

- Resultados del fit para distintos experimentos:



Experimentos de control

- Resultados del fit en función de la estadística.

| Parameter | Value |
|-------------------------|-------|
| F_{sig} | 0.5 |
| $b_{sig} (ps^3)$ | 0.027 |
| $\sigma_t (ps)$ | 0.045 |
| $\Delta\Gamma/\Gamma_s$ | 0.15 |
| $\phi_s (rad)$ | 0.2 |

| N | R_L | $s(R_L)$ | $\mathcal{A}_{\Delta\Gamma}^{long}$ | $s(\mathcal{A}_{\Delta\Gamma}^{long})$ |
|--------|---------|----------|-------------------------------------|--|
| 10 000 | 1.49748 | 0.749877 | 0.625711 | 0.245136 |
| 20 000 | 1.25588 | 0.625262 | 0.535294 | 0.160655 |

El error mejora, pero el valor de la asimetría sigue siendo inconsistente con el input.

Experimentos de control

- Resultados del fit en función del valor de ϕ_s

| Parameter | Value |
|-------------------------|-------|
| F_{sig} | 0.5 |
| $b_{sig} (ps^3)$ | 0.027 |
| $\sigma_t (ps)$ | 0.045 |
| $\Delta\Gamma/\Gamma_s$ | 0.15 |

| $\phi_s (^\circ)$ | $\cos(\phi_s)$ | R_L | $s(R_L)$ | $\mathcal{A}_{\Delta\Gamma}^{long}$ | $s(\mathcal{A}_{\Delta\Gamma}^{long})$ |
|-------------------|----------------|---------|----------|-------------------------------------|--|
| 11.45 | 0.98 | 1.49748 | 0.749877 | 0.625711 | 0.245136 |
| 20 | 0.94 | 1.49329 | 0.563221 | 0.463436 | 0.250688 |
| 30 | 0.87 | 1.54160 | 0.763640 | 0.251571 | 0.227890 |
| 40 | 0.77 | 1.50023 | 0.747040 | 1.19522 | 0.228311 |
| 60 | 0.50 | 1.49040 | 0.743963 | 0.168373 | 0.252011 |

Posible error en la generación de los experimentos

- Código de la función de ajuste

```

Double_t TimeDist::evaluate() const
{
  // ENTER EXPRESSION IN TERMS OF VARIABLE ARGUMENTS HERE

  Double_t GL = gama+gamd/2.;
  Double_t GH = gama-gamd/2.;
  Double_t Gs = gama;
  Double_t RH = RL*(1-ADG)/(1+ADG);

  Double_t Dms = 17*1.5;
  Double_t DGs = gamd;

  Double_t dt = time;
  Double_t sigmat_2 = sigmat*sigmat;
  Double_t A0_2 = a0_2;
  Double_t sq2 = sqrt(2);

  if ( dt < 20*sigmat){

    Double_t glt = .5*exp(0.5*GL*(-2*dt+GL*sigmat_2))*(1.+ RooMath::erf((dt-GL*sigmat_2)/(sq2*sigmat)))/exp(-GL*dt);

    Double_t ght = .5*exp(0.5*GH*(-2*dt+GH*sigmat_2))*(1.+ RooMath::erf((dt-GH*sigmat_2)/(sq2*sigmat)));

  }
  else{
    Double_t glt = exp(GL*(.5*GL*sigmat_2 -dt));/*exp(.5*GL*sigmat_2);

    Double_t ght = exp(GH*(.5*GH*sigmat_2 - dt));
  }

  Double_t t_3 = dt*dt*dt;

  Double_t tacc = t_3 / (bb + t_3) ;

  Double_t tterm0 = 0.5*( RL*glt + RH*ght );

  Double_t K1 = A0_2 * tterm0 ;

  return K1*tacc ;
}

```