M. Benayoun, P. David, L. Del Buono

g-2 :

- *A global treatment of VMD up to the phi : e+e- annihilation anomalies and vector meson partial widths*. **EPJC 65 211-245 (2010)**

- *A global treatment of VMD up to the phi : tau decay and hadronic contribution to g-2*. **EPJC 68 355-379 (2010)**

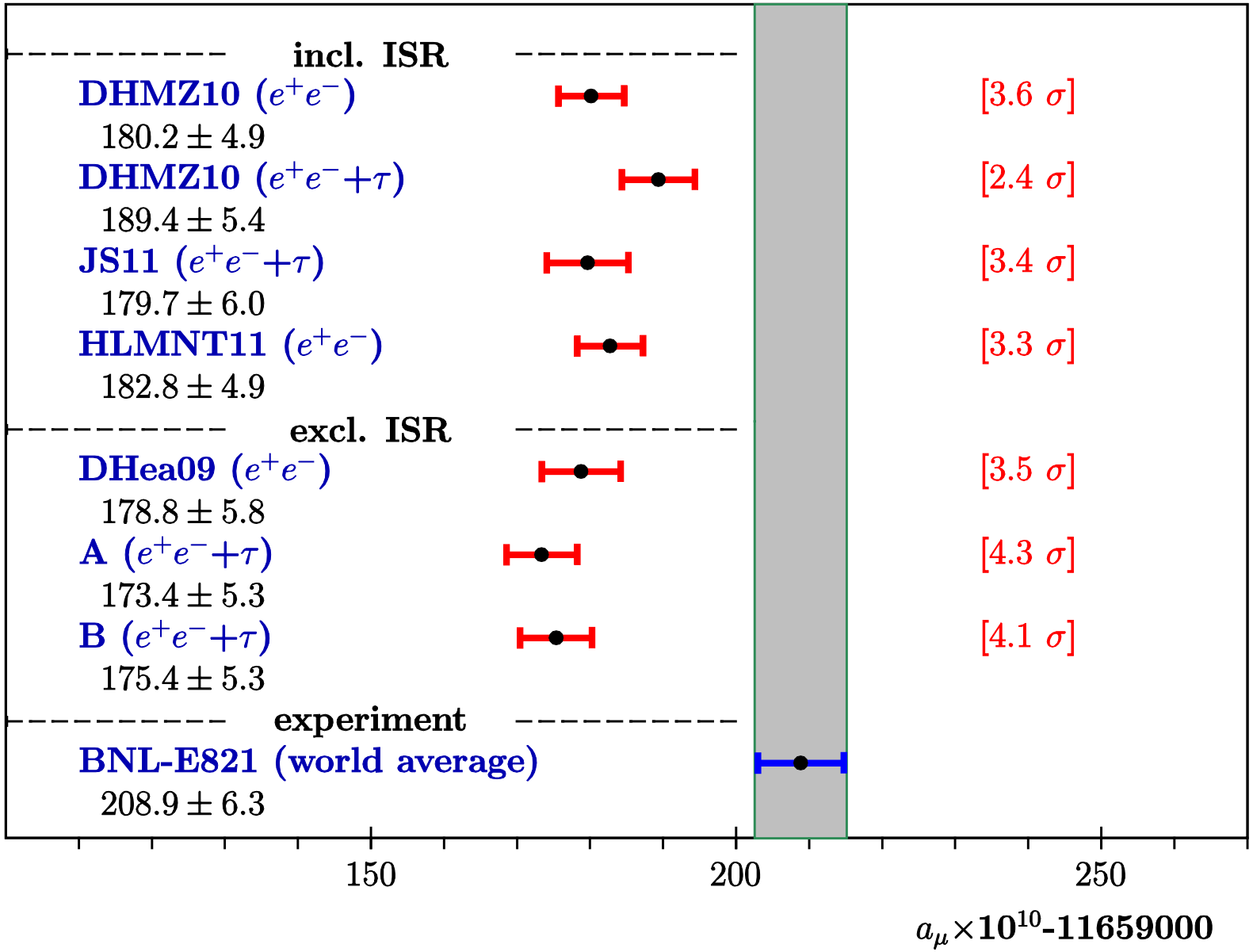
-*Upgraded breaking of HLS model : a full solution of tau e+e- and phi decay issues and its consequences on g-2 VMD estimates*. **submitted EPJC (2011)**

Violation de CP sur LHCb :

-Etude du canal $B^{\pm} \longrightarrow \pi^{\pm}\pi^{\mp}K^{\pm}$

-Etude du canal $B^{\pm} \longrightarrow \eta^{'}(\pi^{\pm}\pi^{\mp}\gamma)K^{\pm}$

g-2



Résultats obtenus pub 2011

$$B^{\pm} \longrightarrow \pi^{\pm}\pi^{\mp}K^{\pm}$$

$$Br(B^{\pm} \longrightarrow \pi^{\pm}\pi^{\mp}K^{\pm}) \sim 5.10^{-5}$$

$$a_{CP}^{PDG}(B^{\pm} \longrightarrow \pi^{\pm}\pi^{\mp}K^{\pm}) \sim 0.038 \pm 0.022$$

Data 2010 et 2011 (< juillet)

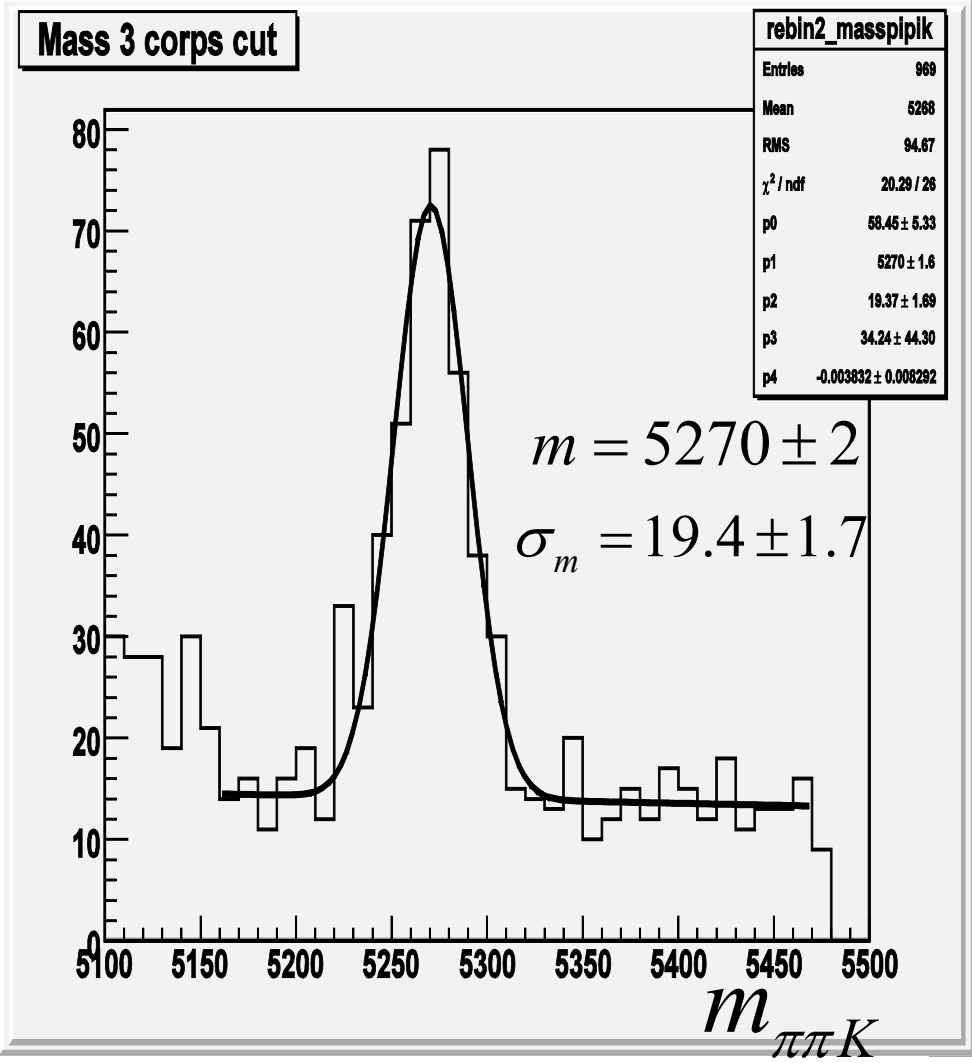
Sélection :

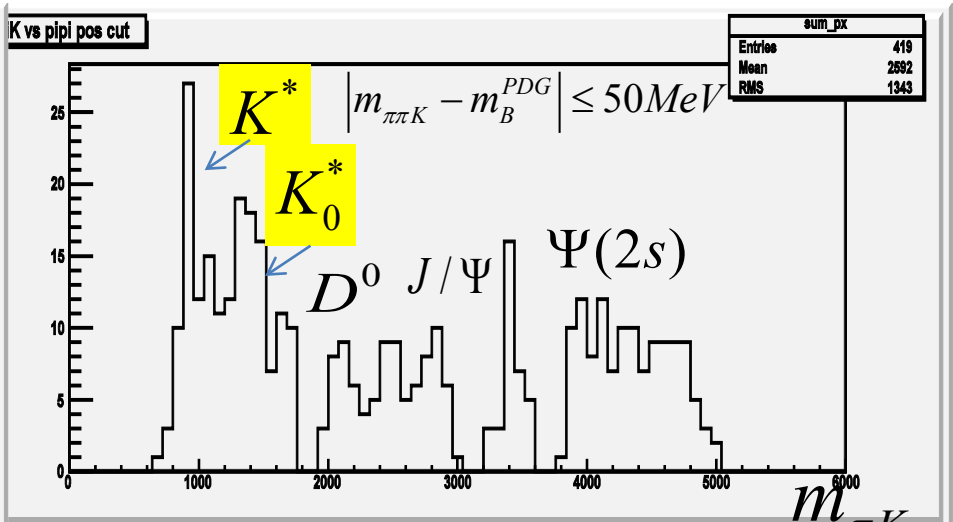
HLT = B2hhh (new release car $\nu_{2010/2011(partiel)} \sim 2.5$)

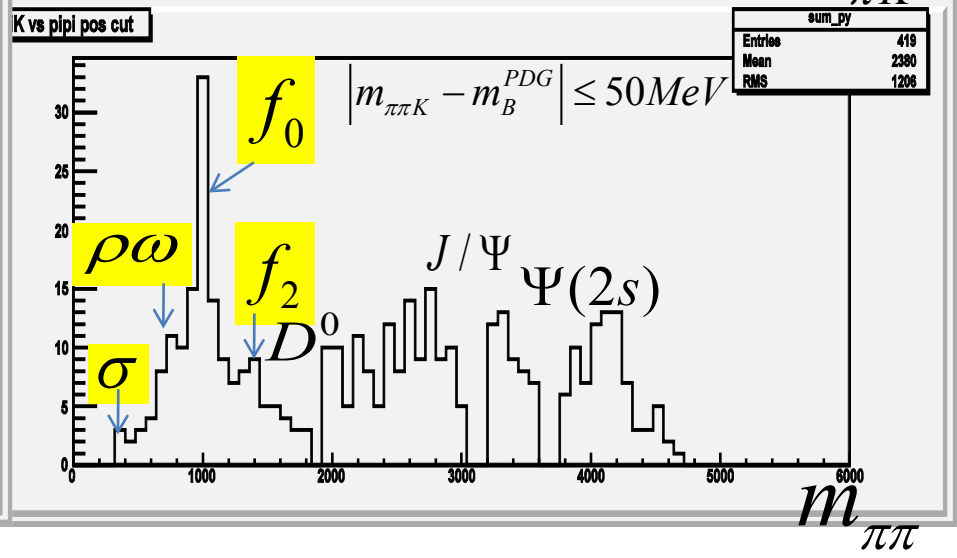
Algorithme revisité et optimisé

Coupures charme etc + misId

$$B^{\pm} \longrightarrow \pi^{\pm}\pi^{\mp}K^{\pm}$$







$B / S(3\sigma_m) \sim 0.55$

$N_{\pi^{\pm}\pi^{\mp}K^{\pm}}(3\sigma_m) \sim 350$

Fin 2011 ~ 4 fois plus

$$B^{\pm} \longrightarrow \eta'(\pi^{\pm}\pi^{\mp}\gamma)K^{\pm}$$

$$Br(B^{\pm} \longrightarrow \eta'(\pi^{\pm}\pi^{\mp}\gamma)K^{\pm}) \sim 2.10^{-5}$$

$$a_{CP}^{PDG}(B^{\pm} \longrightarrow \eta'(\pi^{\pm}\pi^{\mp}\gamma)K^{\pm}) \sim 0.013 \pm 0.017$$

Data 2010/2011 (<1/2 juillet) : algorithme de sélection+coup. charme etc

Problèmes avec les « photons »

$$\frac{\sigma_E}{E} = \frac{10\%}{\sqrt{E}} + 1\% \qquad \nu_{2010/2011(partiel)} \sim 2.5$$

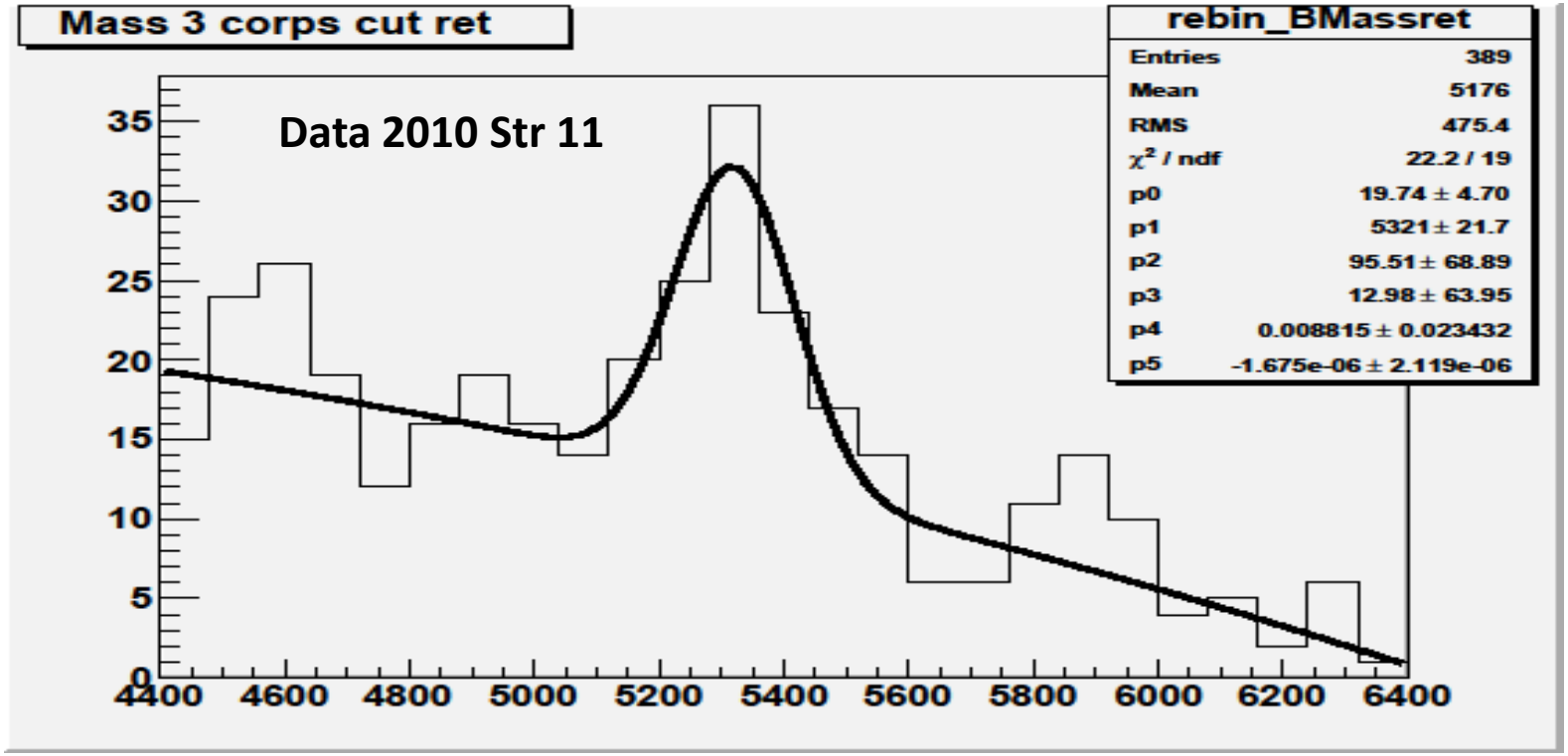
Définition des clusters

Dérive de m_{π^0}

Calibration

$$B^{\pm} \longrightarrow \eta'(\pi^{\pm}\pi^{\mp}\gamma)K^{\pm}$$

Illustration du pb. $B^0 \longrightarrow K^*\gamma$



$$\sigma_{K^*\gamma} \sim 100MeV \gg \sigma_{\pi\pi K}$$

$$B^{\pm} \longrightarrow \eta'(\pi^{\pm}\pi^{\mp}\gamma)K^{\pm}$$

On cherche x tq : $(P_{\eta'}^{PDG})^2 = (P_{\pi\pi}^{rec} + (1+x)P_{\gamma}^{rec})^2$

On calcule : $(P_B^{rec})^2(x)$

On cherche y tq : $(P_B^{PDG})^2 = (P_{\pi\pi K}^{rec} + (1+y)P_{\gamma}^{rec})^2$

On calcule : $(P_{\eta'}^{rec})^2(y)$

Pour le signal si : $\sigma_{\vec{p}_i} = 0 \quad \Rightarrow x = y$

Sélection sur : $\left|\dfrac{x-y}{2+x+y}\right|$ $\quad (P_B^{rec})^2(x) \qquad (P_{\eta'}^{rec})^2(y)$

On valide par : $(P_{\pi\pi}^{rec})^2 \equiv (P_{\rho}^{PDG})^2$

Indépendance fonctionnelle de x et y
Parfaitement connu pour le η'

$$B^{\pm} \longrightarrow \eta'(\pi^{\pm}\pi^{\mp}\gamma)K^{\pm}$$

$$\left| m_{\pi\pi\gamma}(y) - m_{\eta'}^{PDG} \right| \leq 20 MeV$$