

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

Contour Plots

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24/06/2009

ϕ_s PDF

► PDF expression

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

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

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

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

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

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

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

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

ϕ_s PDF

► PDF expression

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

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

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

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

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

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

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

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

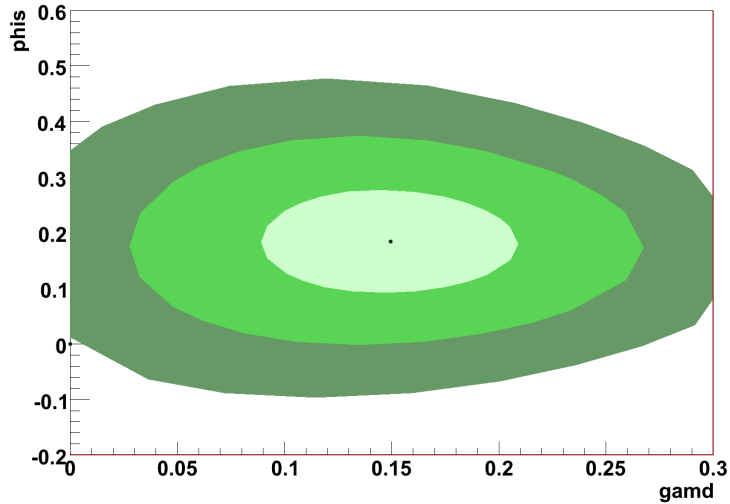
$$P_{sig}(\theta_1, \theta_2) = (1 + k_1 \cos \theta_1 + k_2 \cos^2 \theta_1 + k_3 \cos^3 \theta_1) \\ (1 + k_1 \cos \theta_2 + k_2 \cos^2 \theta_2 + k_3 \cos^3 \theta_2)$$

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

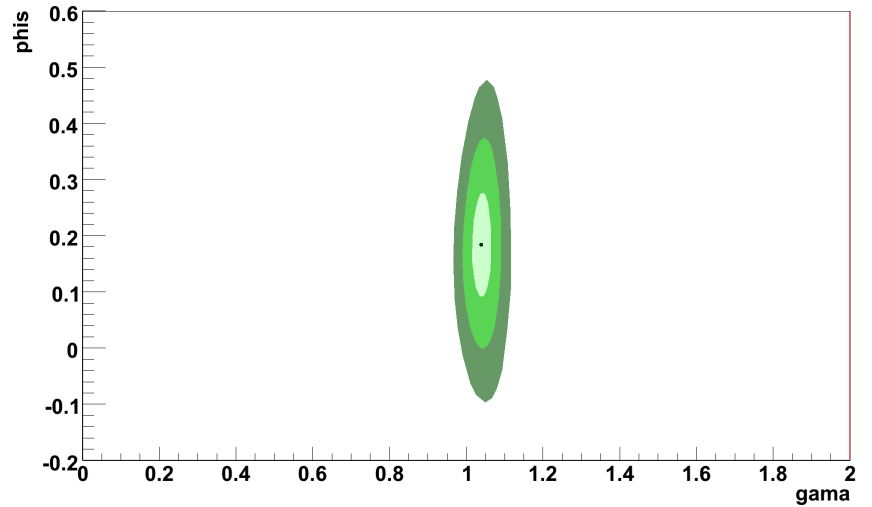
$$P_{bkg}(\theta_1, \theta_2) = (1 + c_1 \cos \theta_1 + c_2 \cos^2 \theta_1 + c_3 \cos^3 \theta_1) \\ (1 + c_1 \cos \theta_2 + c_2 \cos^2 \theta_2 + c_3 \cos^3 \theta_2)$$

ϕ_s PDF Contours

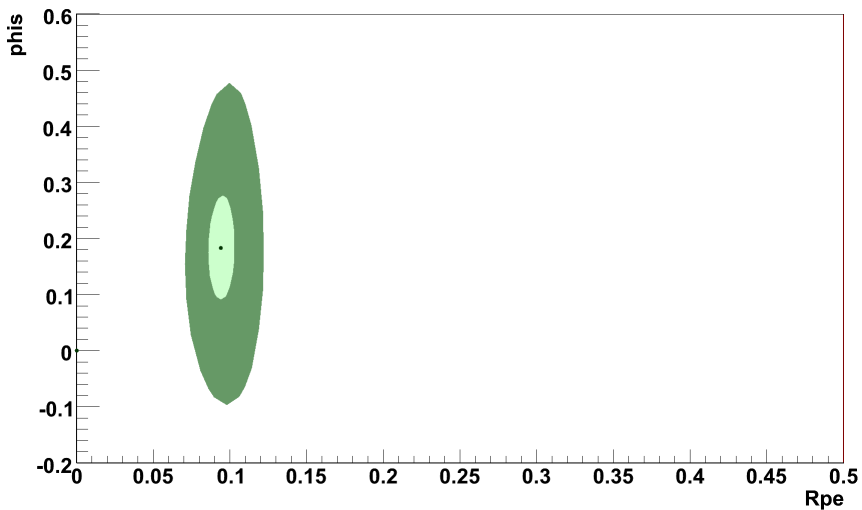
RooMinuit contour plot



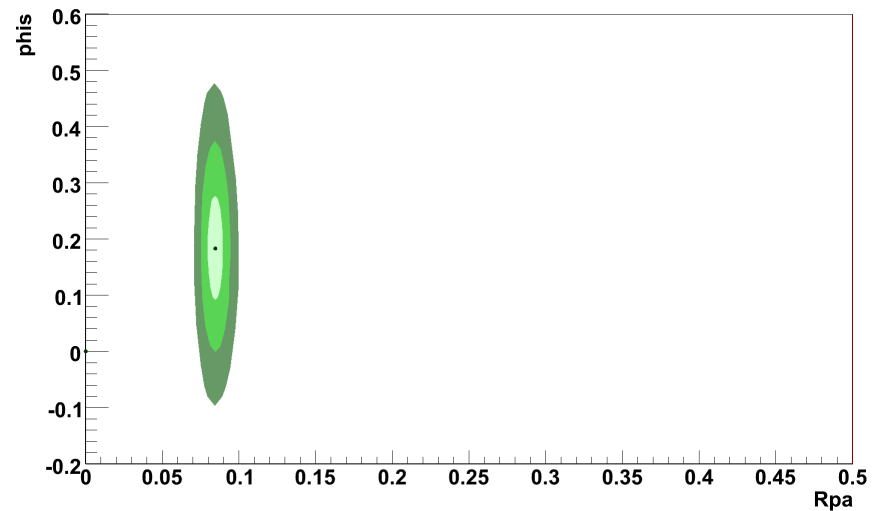
RooMinuit contour plot



RooMinuit contour plot

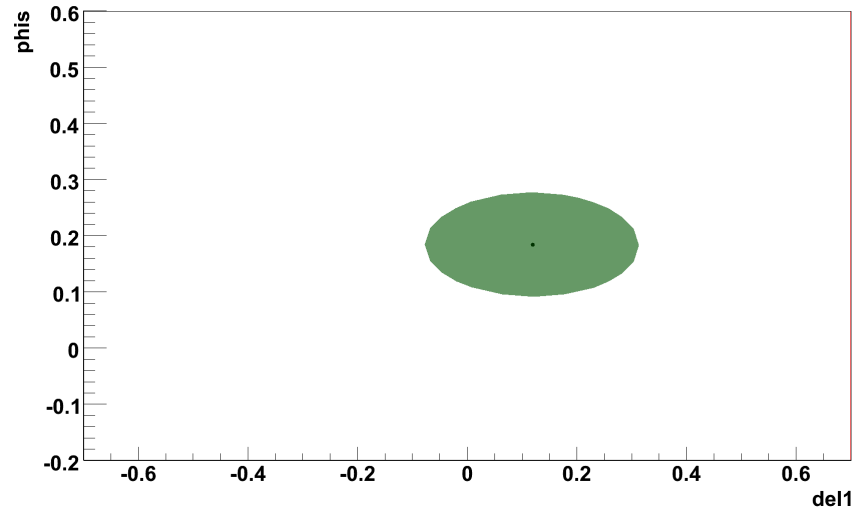


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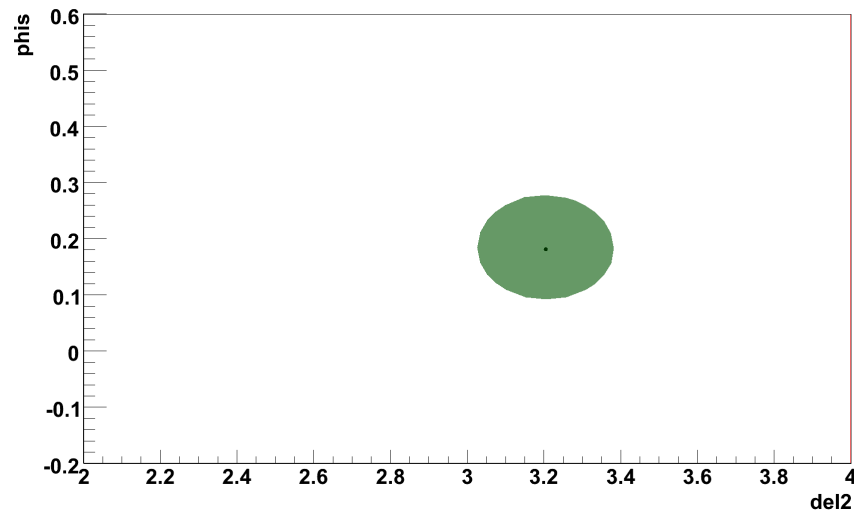


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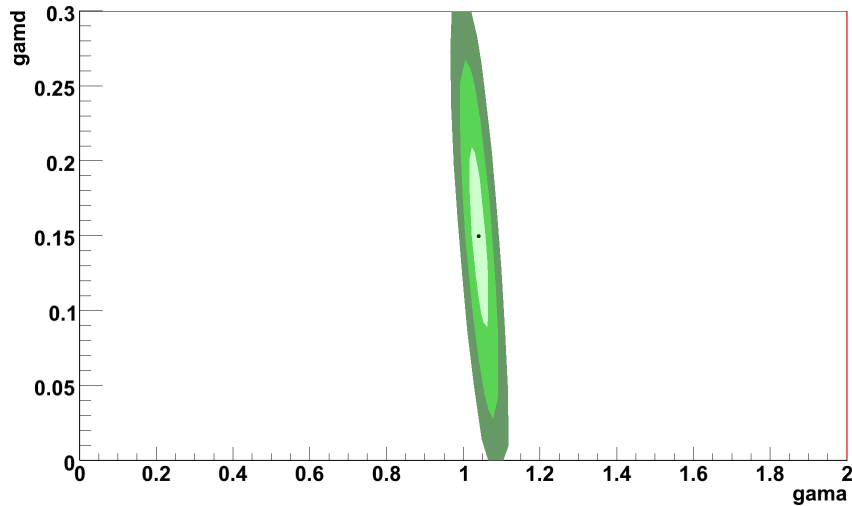


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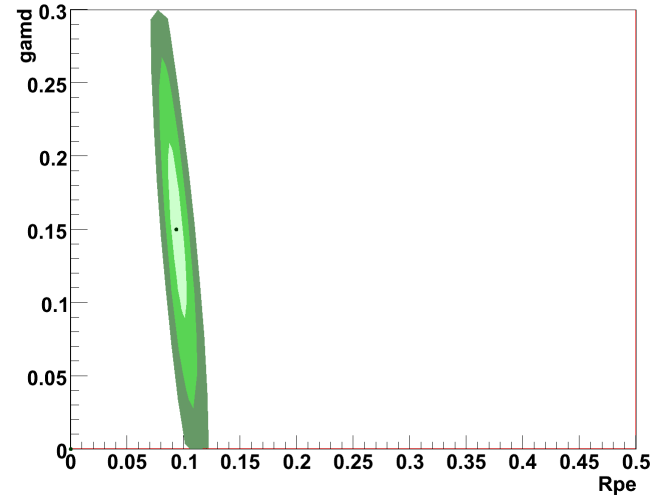


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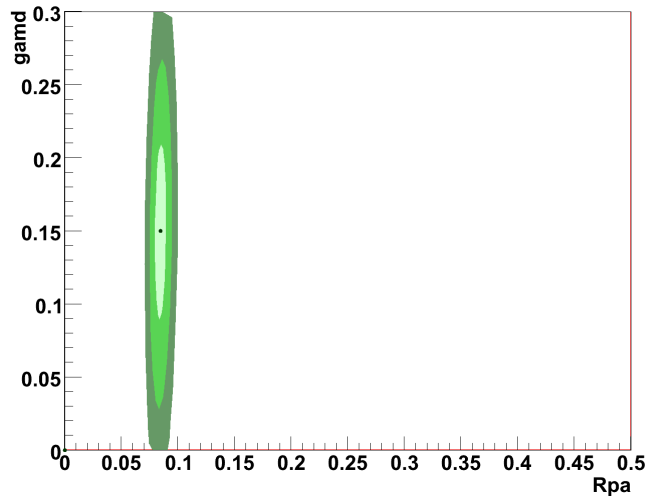
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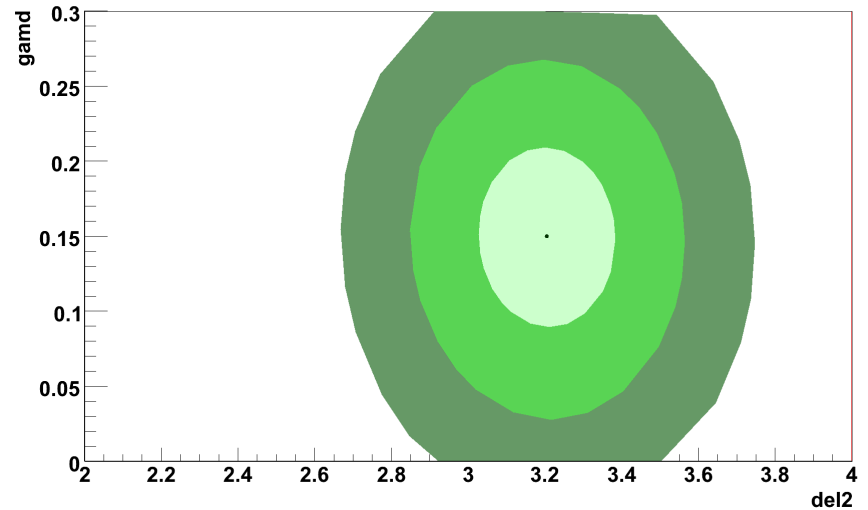
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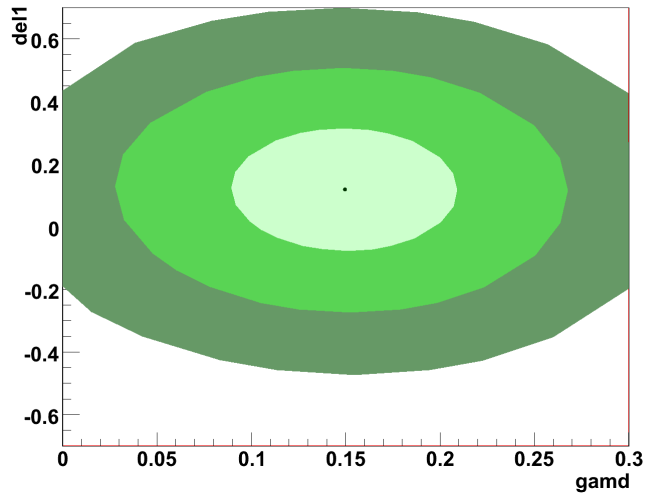


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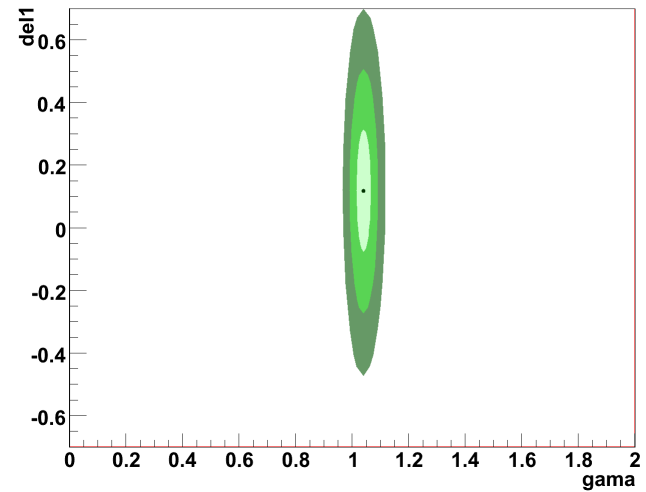


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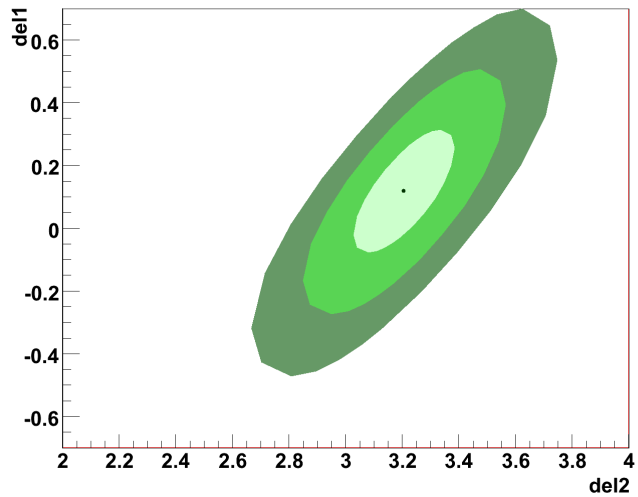
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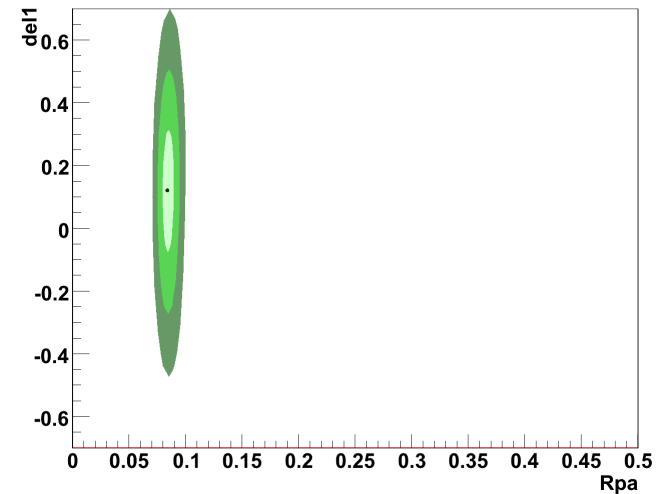
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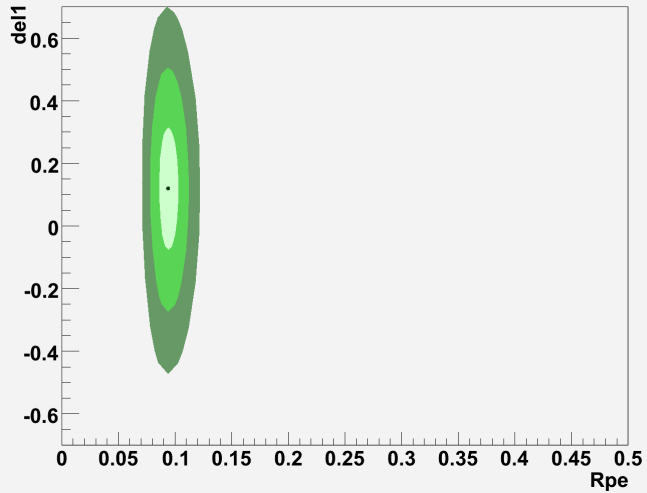


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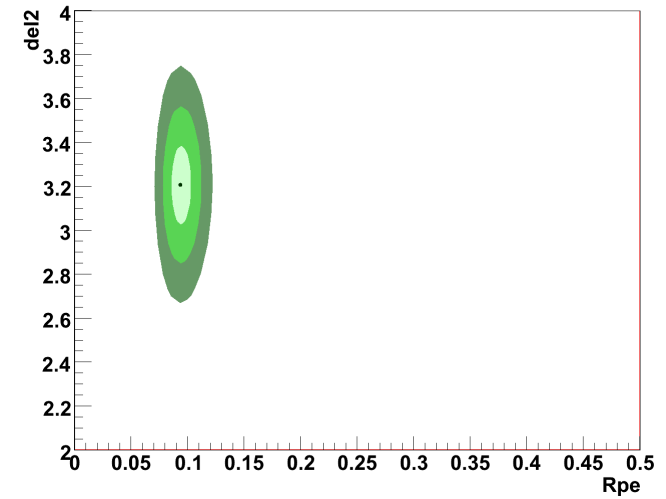


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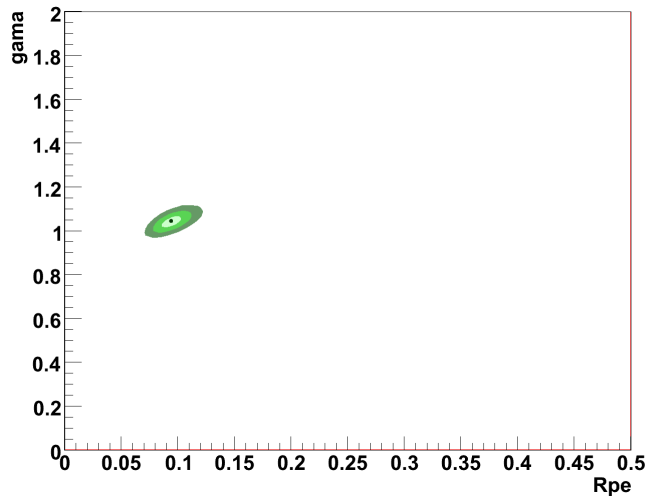
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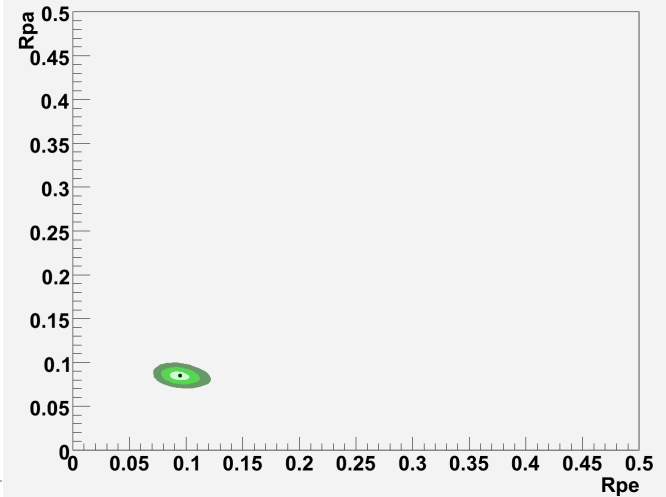
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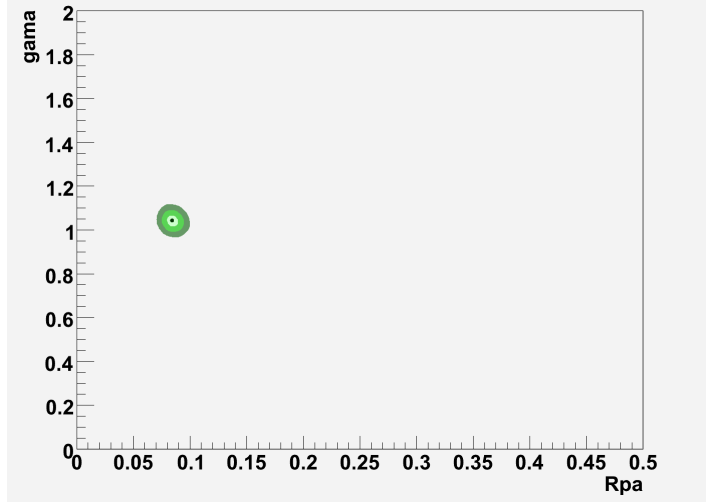


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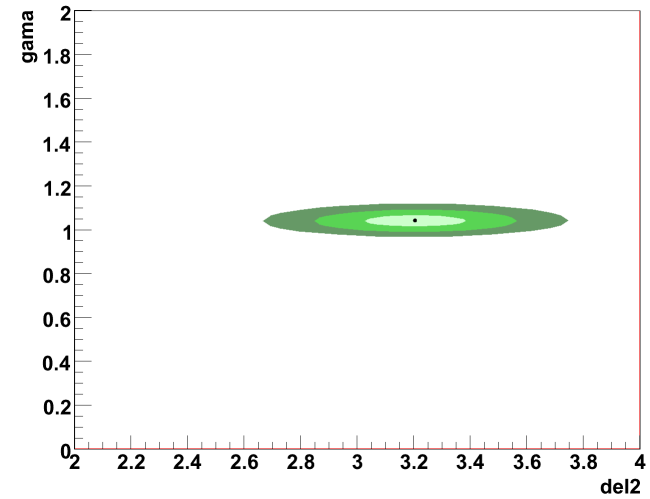


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