U, LT, TT Legendre Moments: χ^2

Hybrid Baryons

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Legendre moments

$$P_m = \frac{2m+1}{2}\int_{-1}^{1} L_m(x)f(x)dx$$

$$L_m(x) = \sum_{j=0}^{m} a_{mj}x^j \qquad a_{mj} = (-1)^{(m-j)/2}\frac{1}{2^m}\frac{(m+j)!}{\left(\frac{(m-j)}{2}\right)!\left(\frac{(m+j)}{2}\right)!j!} \qquad m-j = even$$

$$L_0 = 1$$

$$L_1 = cos\vartheta$$

$$L_2 = \frac{1}{2}(3cos\vartheta^2 - 1)$$

$$L_3 = \frac{1}{2}(5cos\vartheta^3 - 3cos\vartheta)$$

$$L_4 = \frac{1}{8}(35cos\vartheta^4 - 30cos\vartheta^2 + 3)$$

$$L_5 = \frac{1}{8}(63cos\vartheta^5 - 70cos\vartheta^3 + 15cos\vartheta)$$

$$L_6 = \frac{1}{16}(231cos\vartheta^6 - 315cos\vartheta^4 + 105cos\vartheta - 5)$$

χ^2 vs $A_{1/2}$

The dependency of χ^2 calculated as

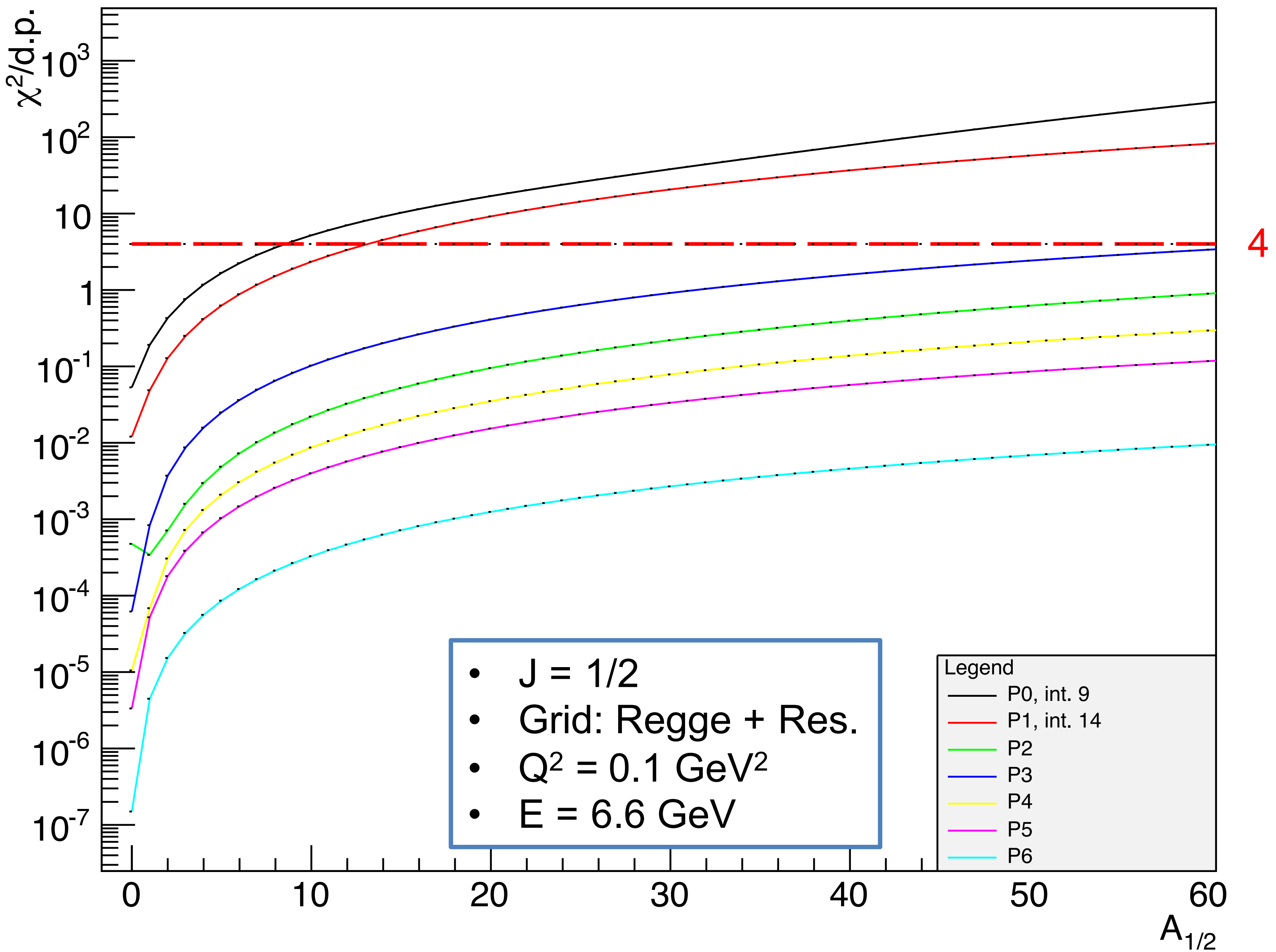
$$\chi^2 = \frac{1}{N_{d.p.}} \sum_W \frac{(P_m^{model + hybrid,\ variable\ A_{1/2}} - P_m^{model})^2}{\delta^2}$$

on a variable $A_{1/2}$ has been estimated for Legendre moments $P_0,\ldots,P_6$ for different configurations:

- E_{beam} = 6.6 GeV, 8.8 GeV ⟶ same results
- Q^2 = 0.1 GeV^2, 0.562 GeV^2, 1.002 GeV^2

For each curve the value of $A_{1/2}$ for which the χ^2 exceeds 4 has been obtained.

U Legendre moment: χ^2 vs $A_{1/2}$



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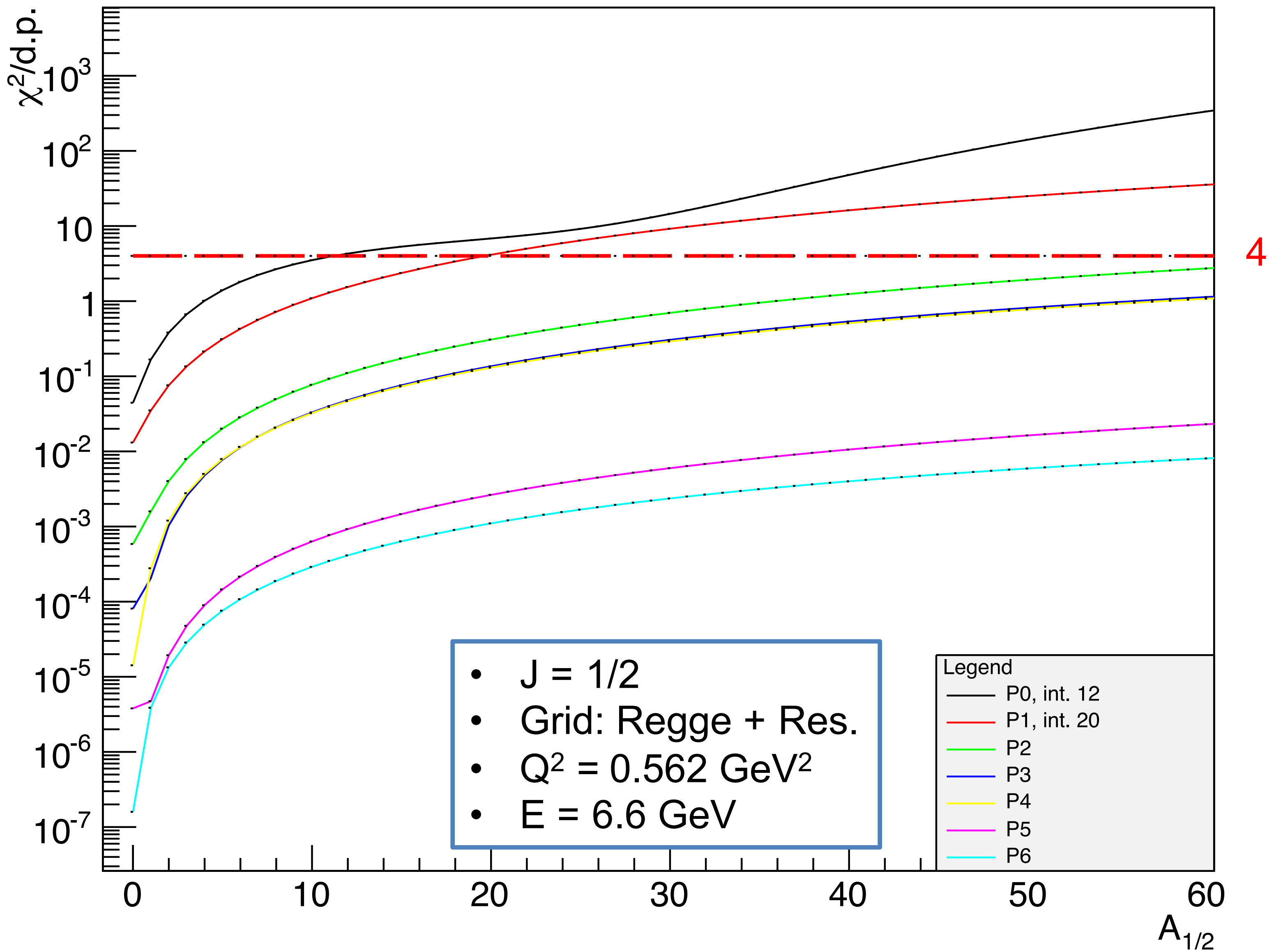

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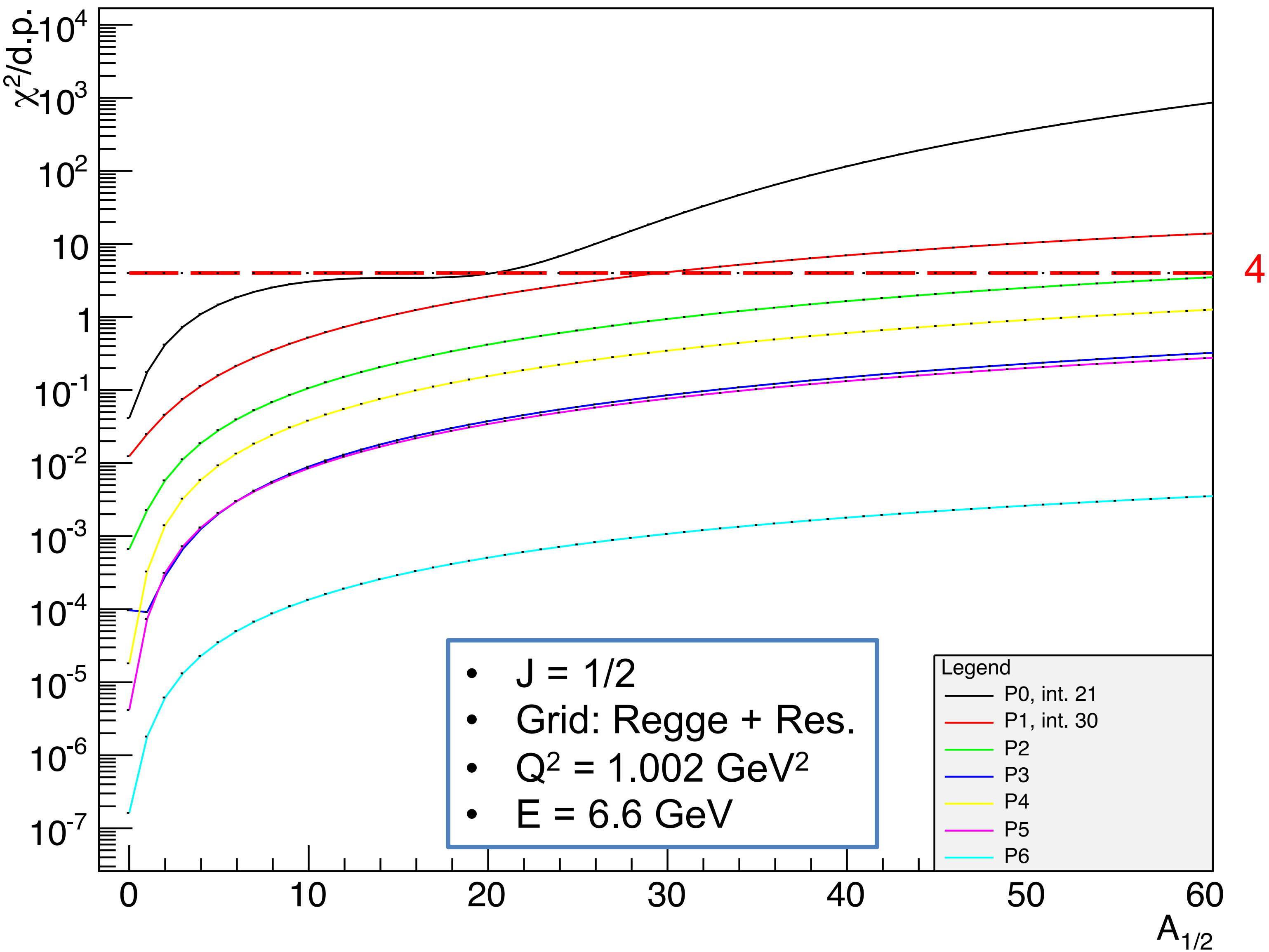
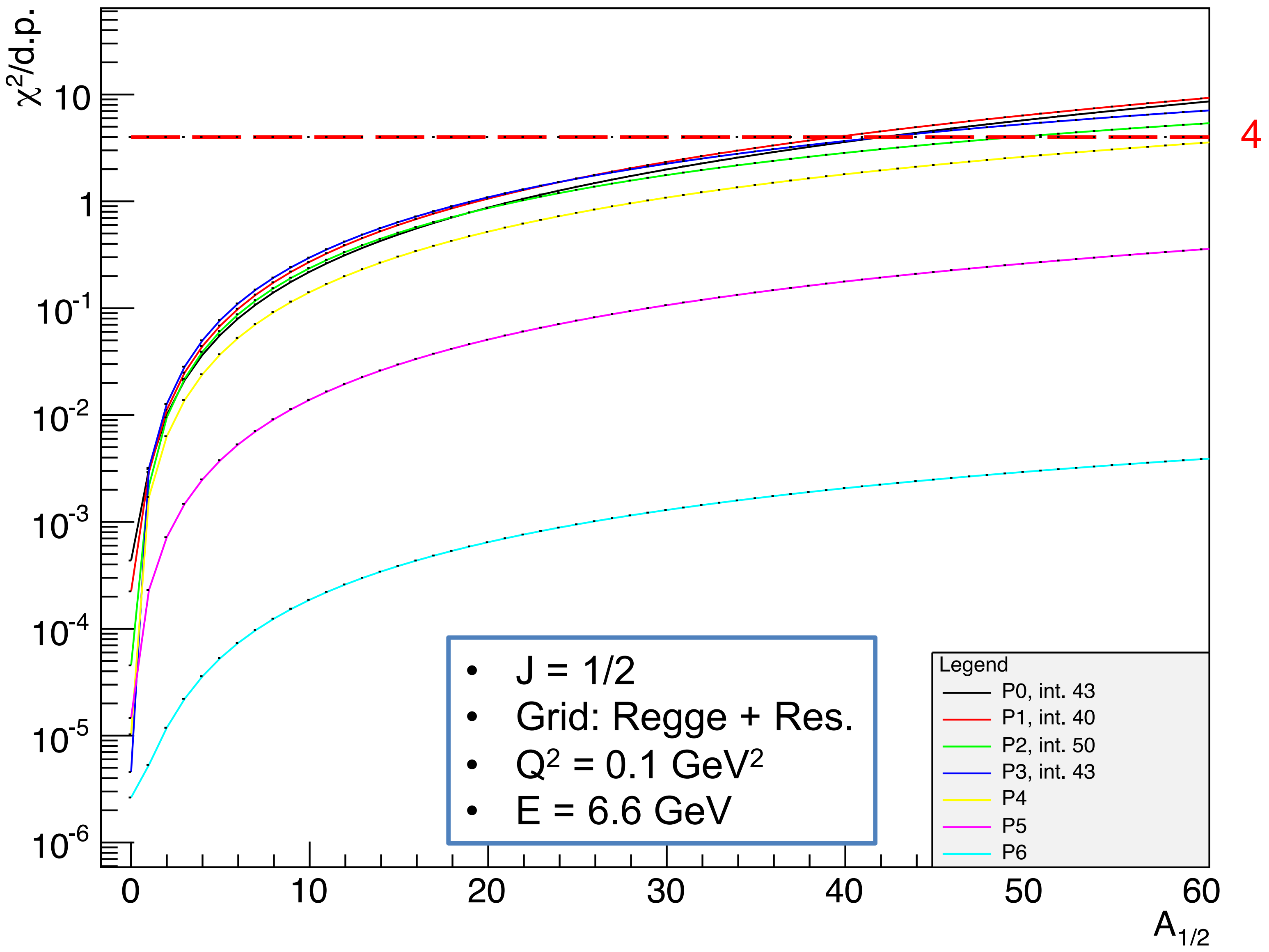
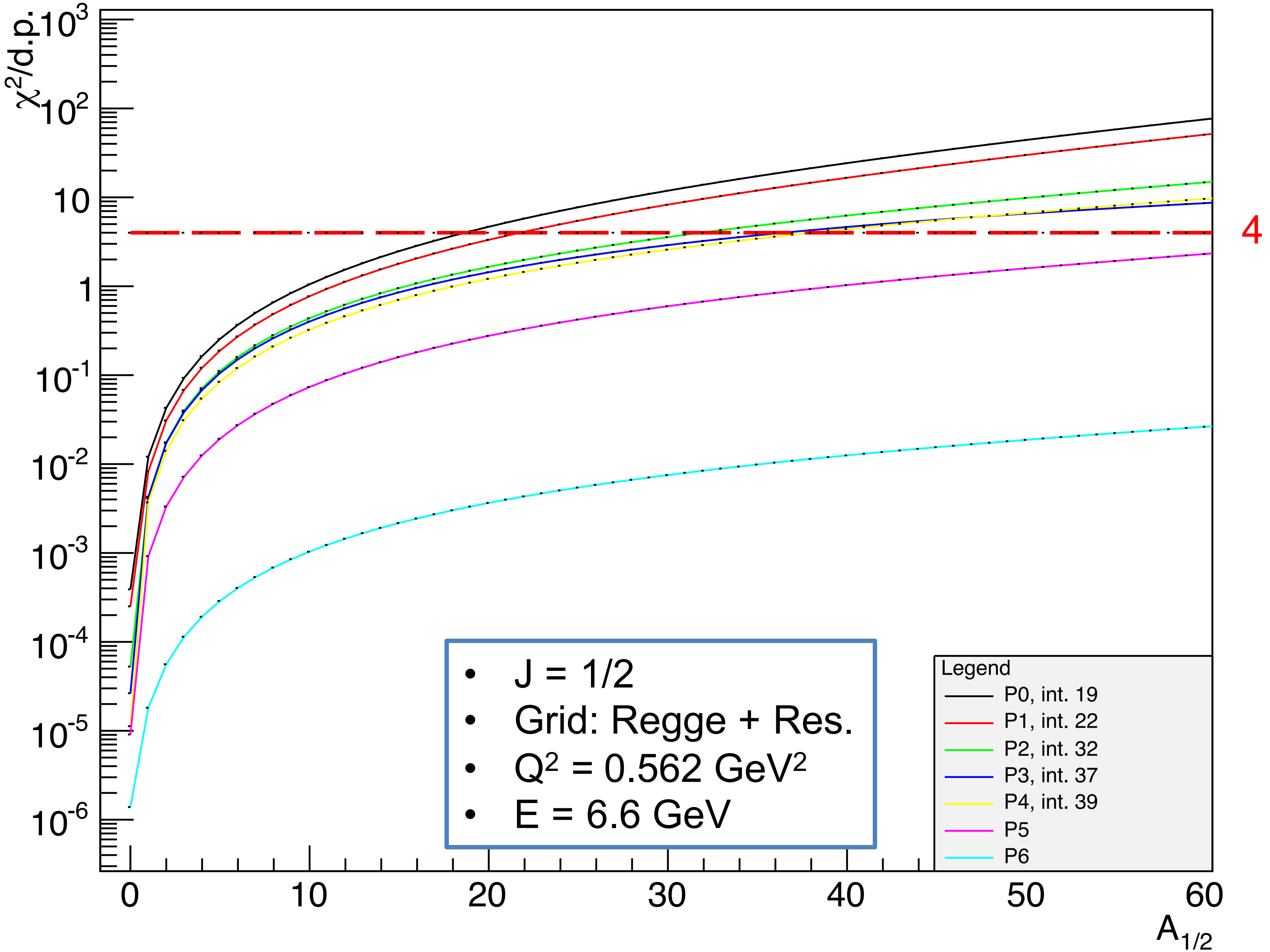


LT Legendre moment: χ^2 vs $A_{1/2}$



LT Legendre moment: χ^2 vs $A_{1/2}$



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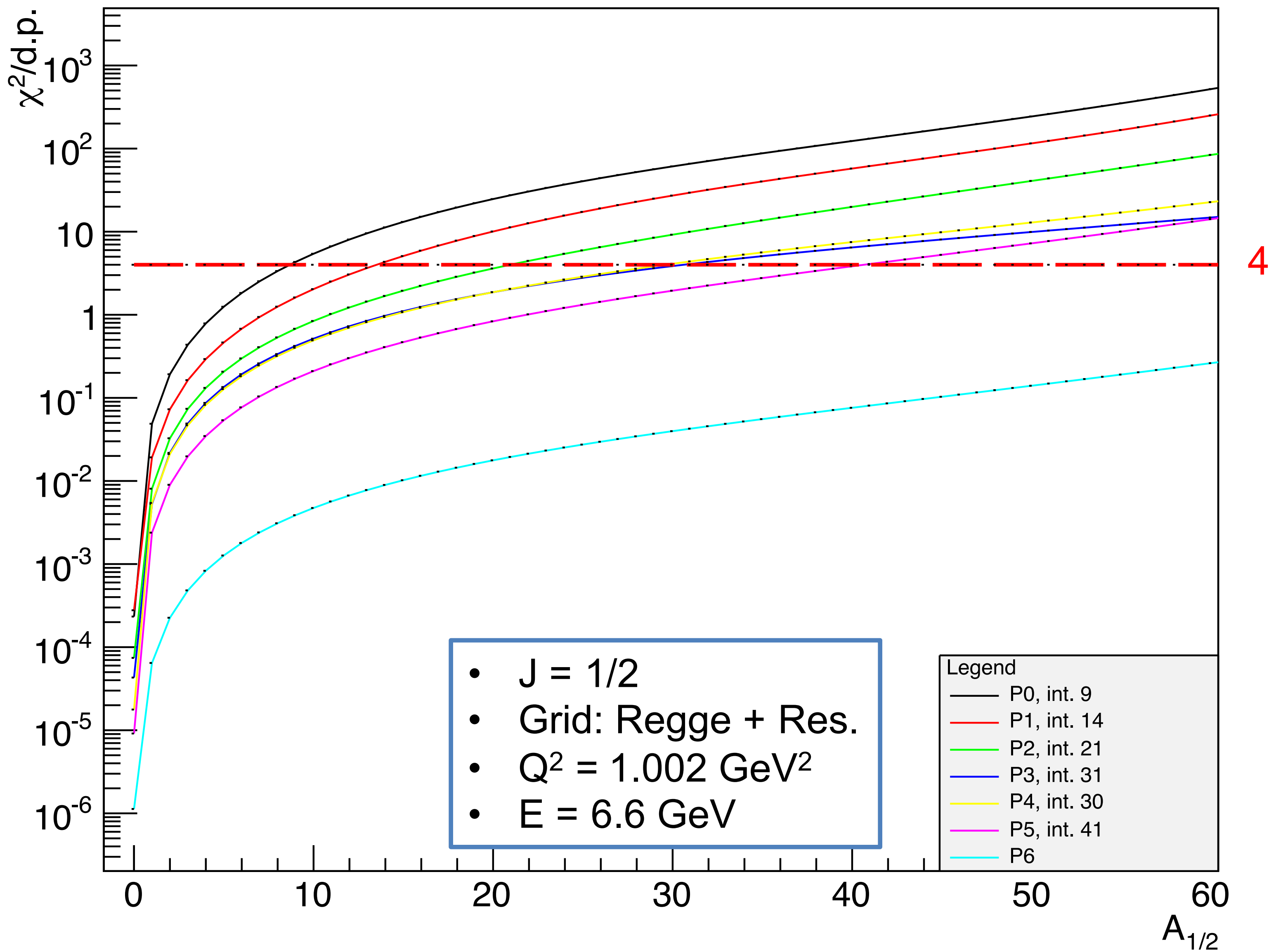
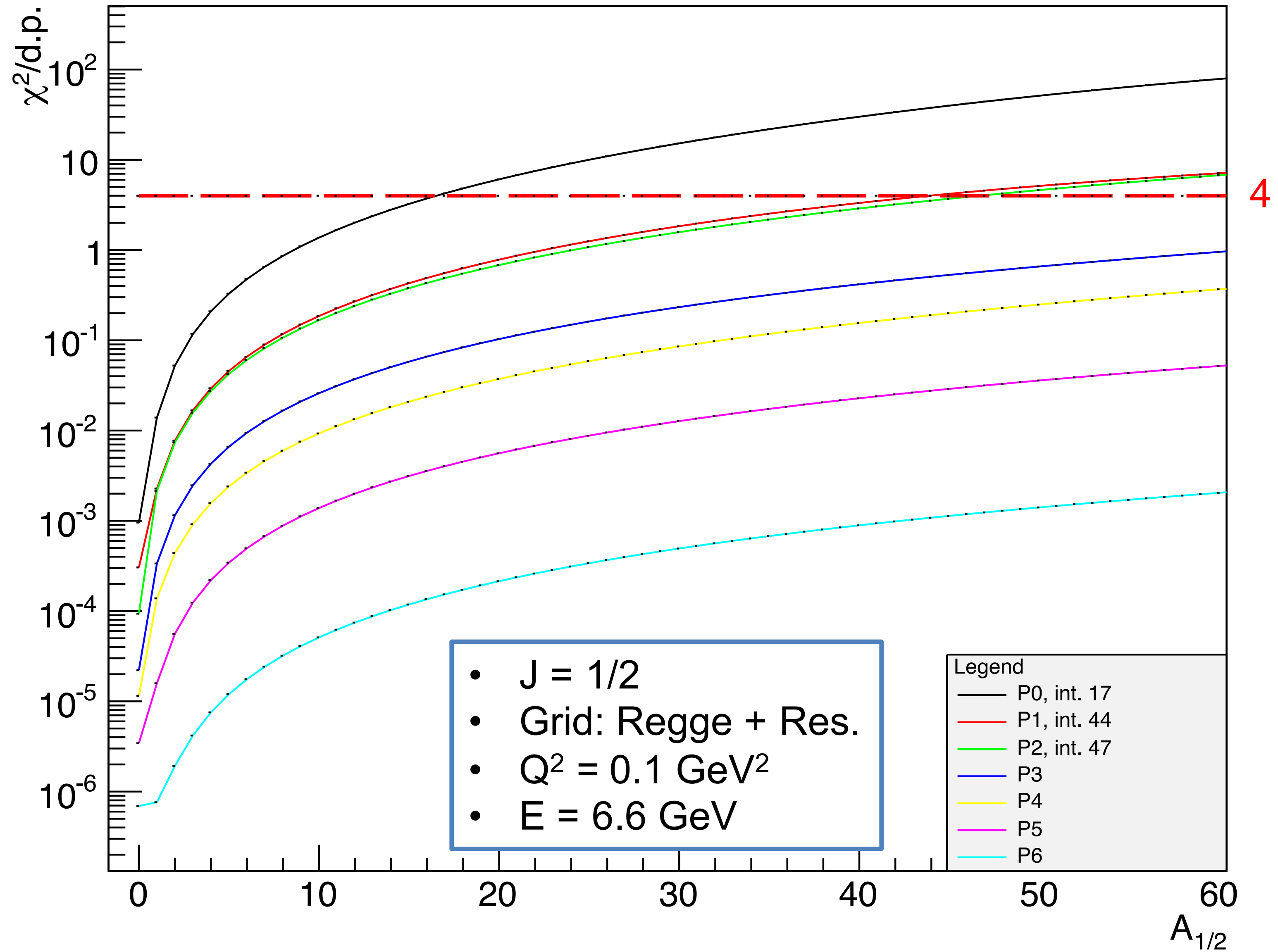


TT Legendre moment: χ^2 vs $A_{1/2}$



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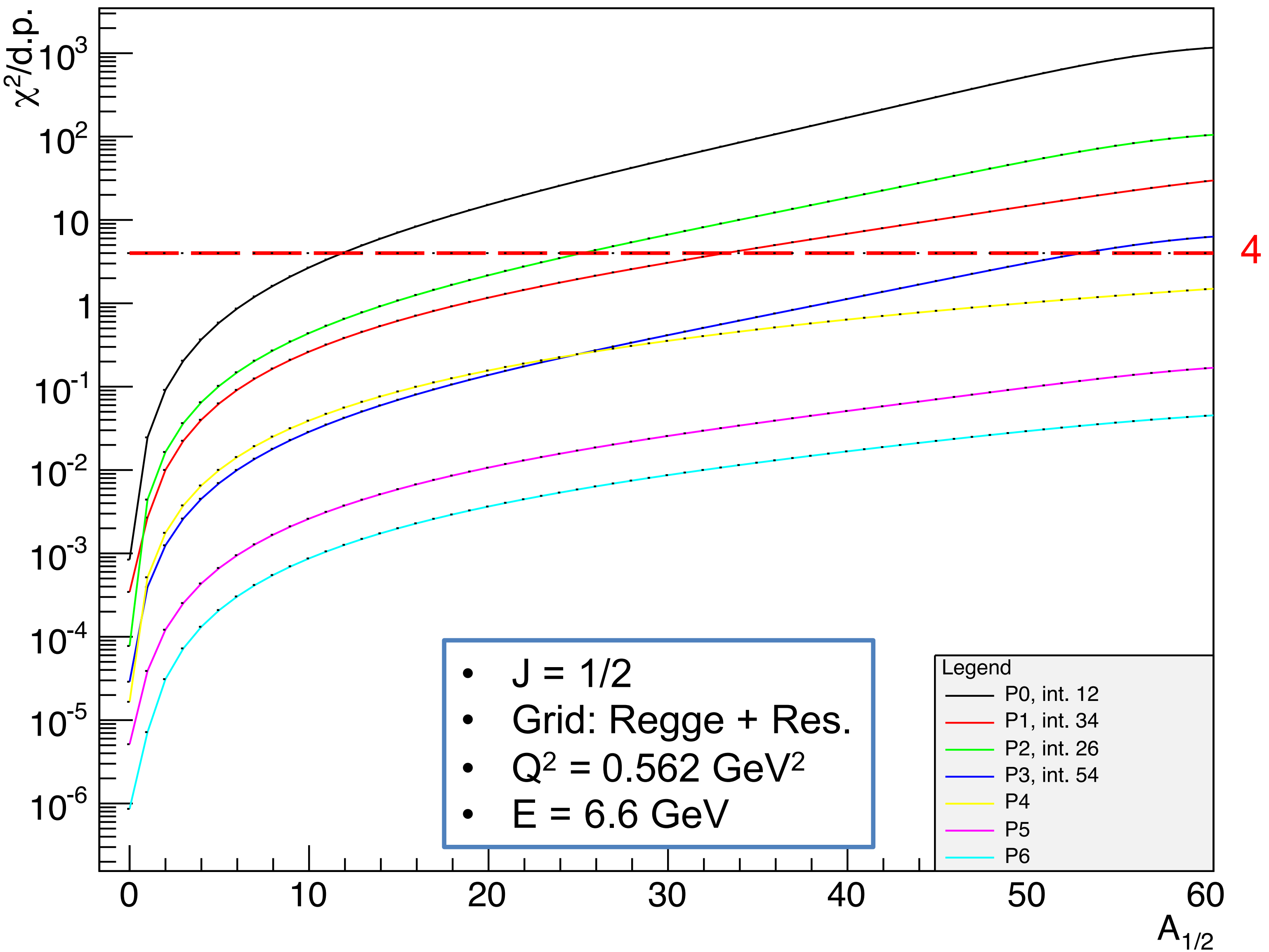

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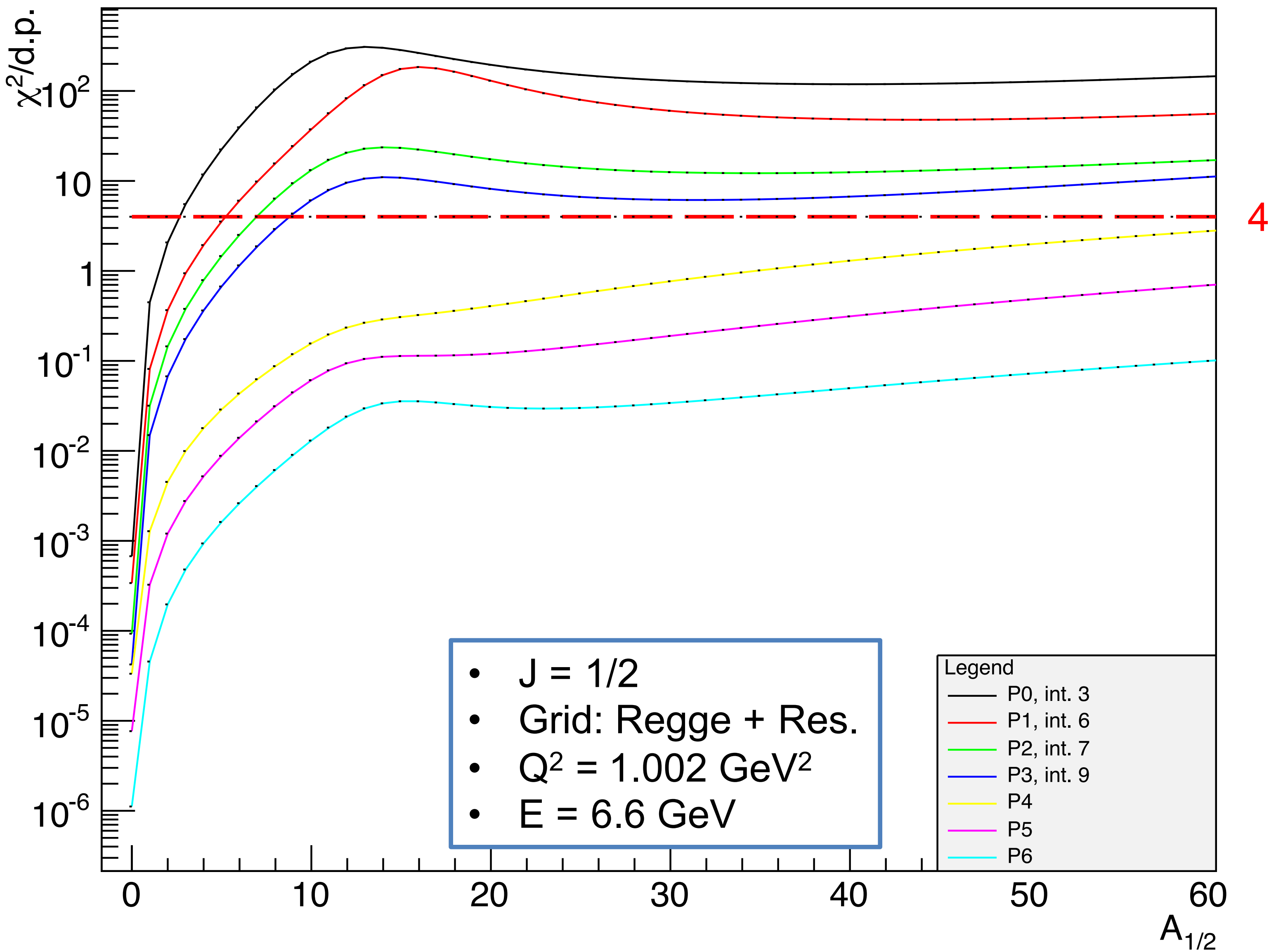


χ^2 vs M_{res}

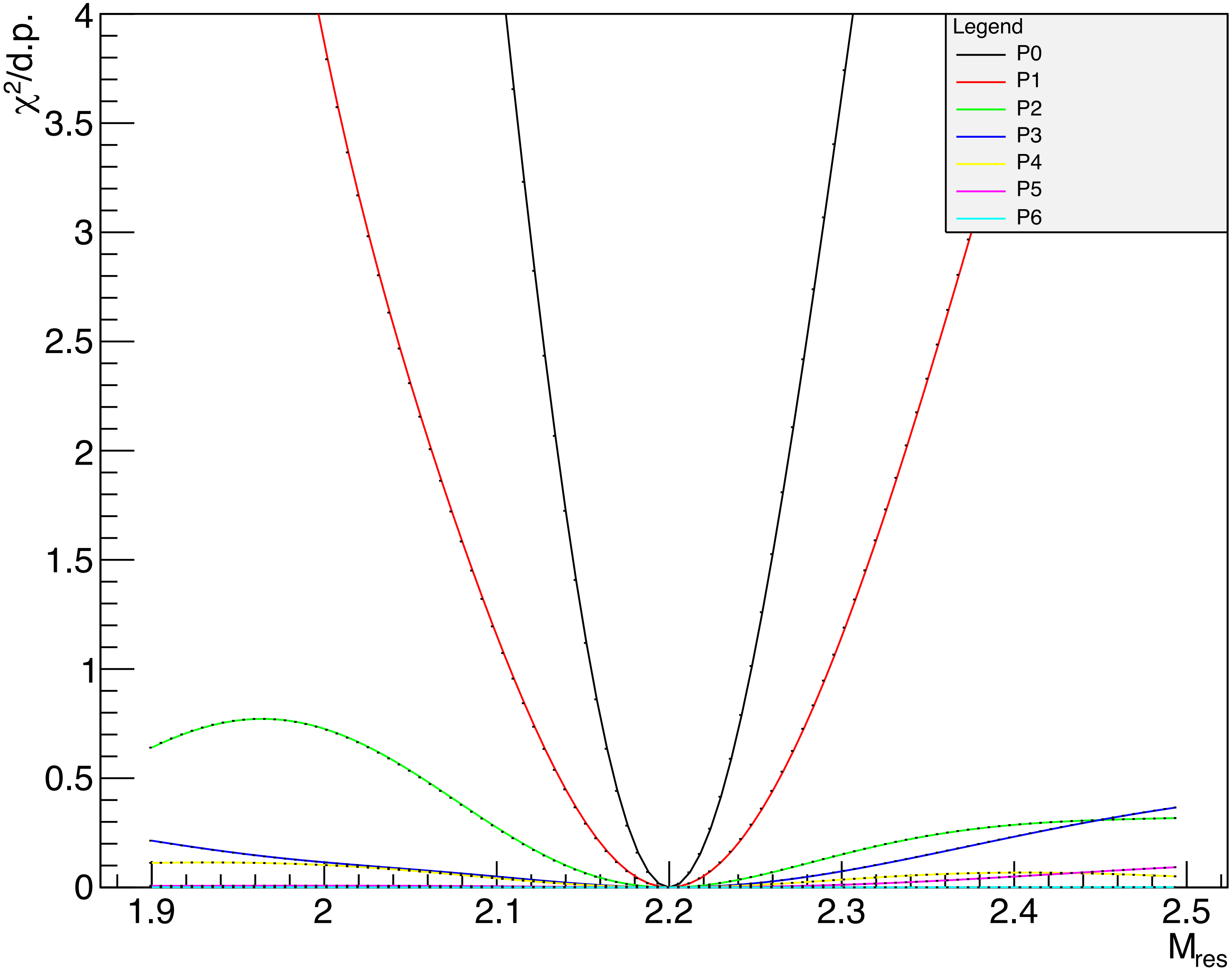
The dependency of χ^2 calculated as

$$\chi^2 = \frac{1}{N_{d.p.}} \sum_{W} \frac{\left(P_m^{model\ +\ hybrid\ with\ M_{res}=2.2\ GeV} - P_m^{model\ +\ hybrid\ with\ variable\ M_{res}}\right)^2}{\delta^2}$$

on a variable M_{res} has been estimated for Legendre moments $P_0,\ldots,P_6$ for different configurations:

- E_{beam} = 6.6 GeV, 8.8 GeV ⟶ same results
- $A_{1/2}$ = 20, 40
- Q^2 = 0.1 GeV^2, 0.562 GeV^2, 1.002 GeV^2

U Legendre moment: χ^2 vs M_{res}



- J = ½
- Regge + Res.
- Q^2 = 0.1 GeV^2
- E = 6.6 GeV
- A = 20

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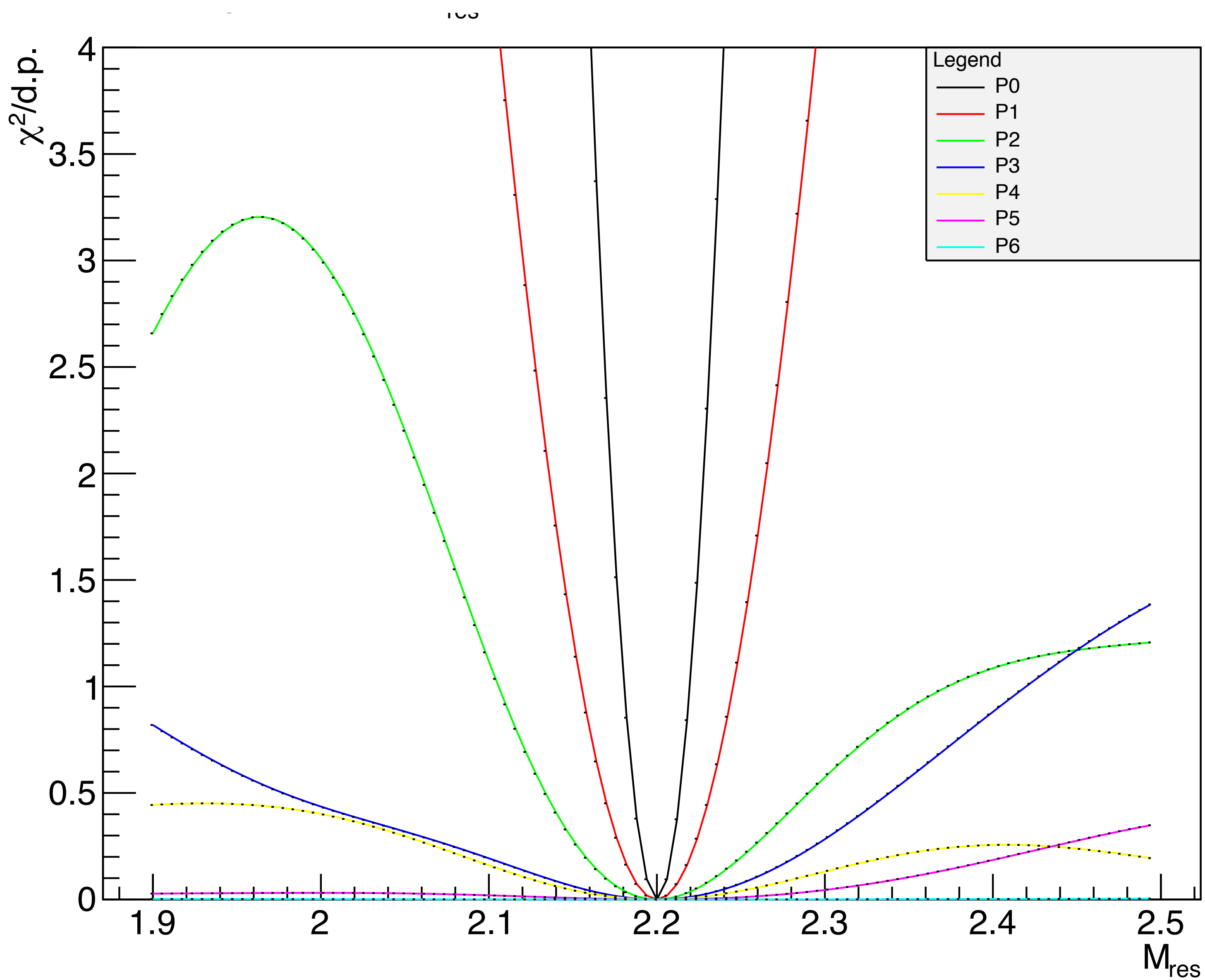

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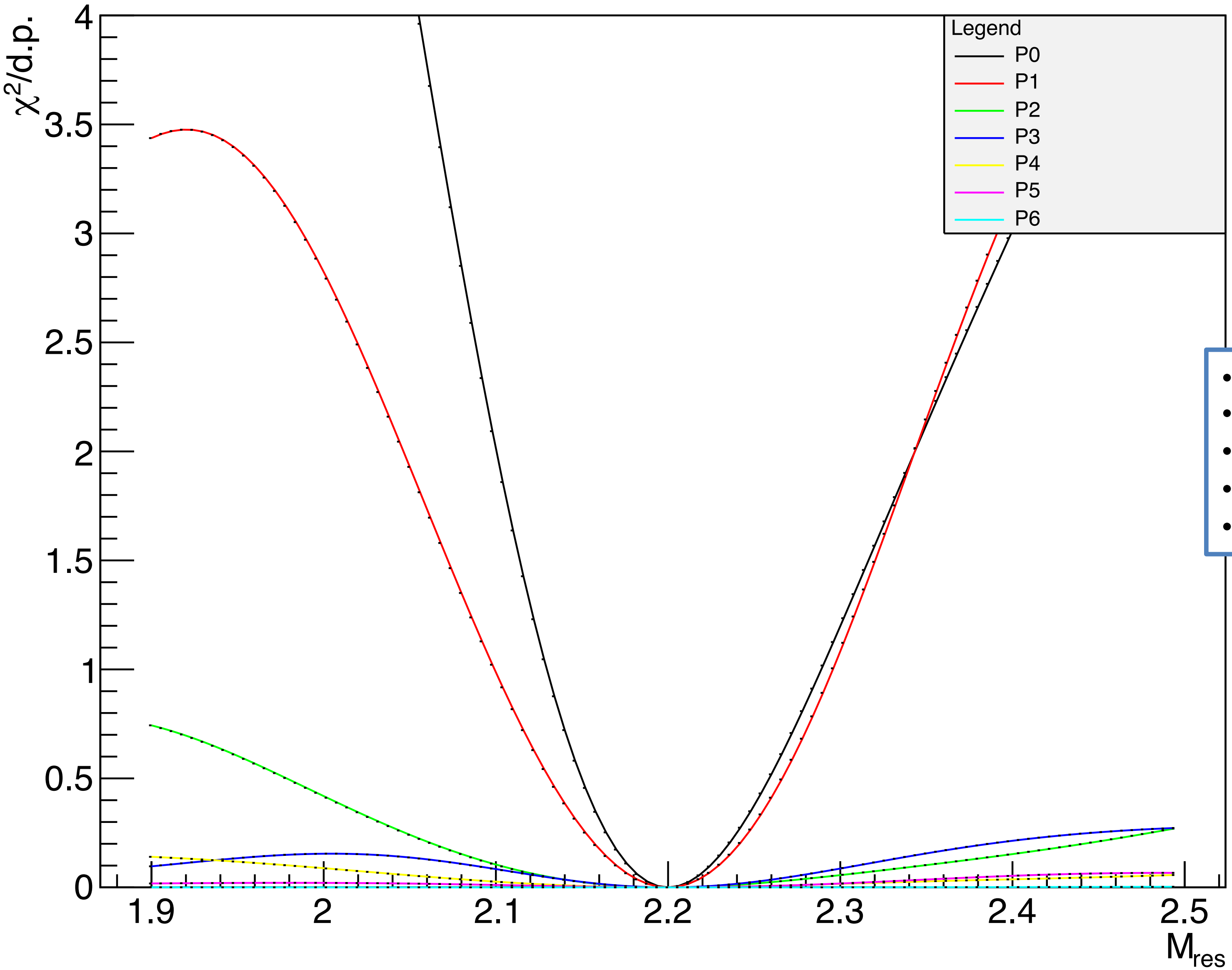

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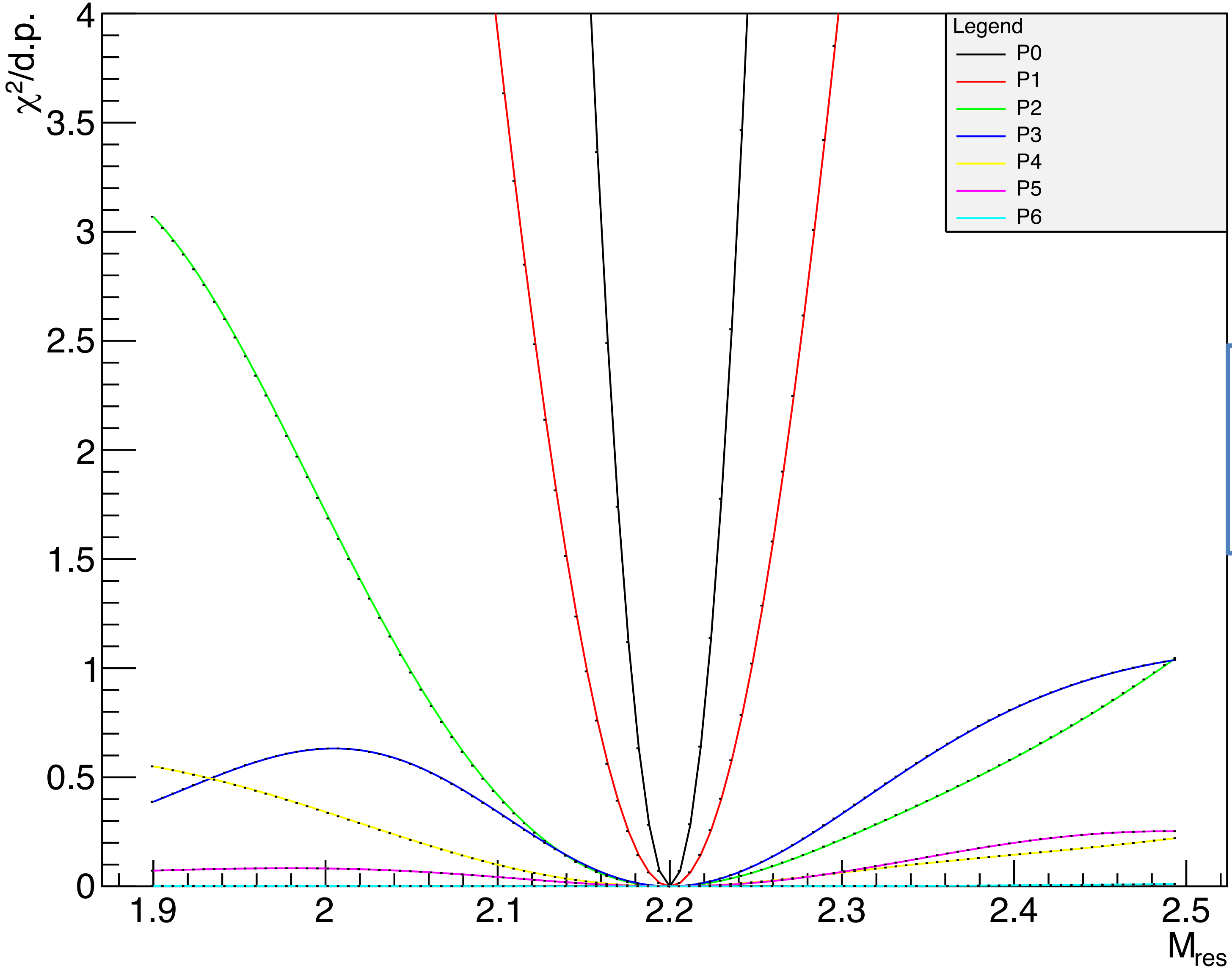

- $J = \frac{1}{2}$
- Regge + Res.
- $Q^2 = 0.562$ GeV^2
- E = 6.6 GeV
- A = 40

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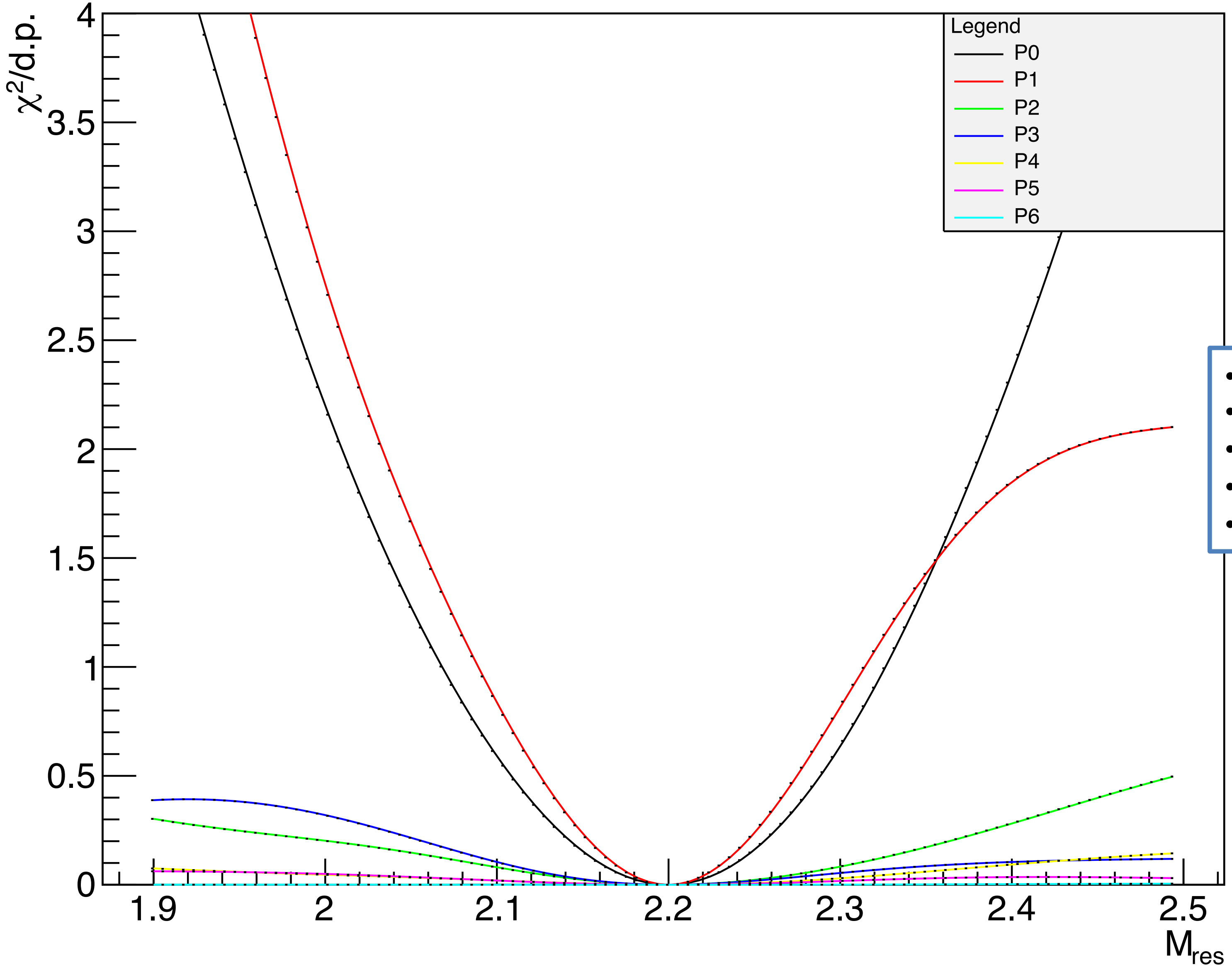

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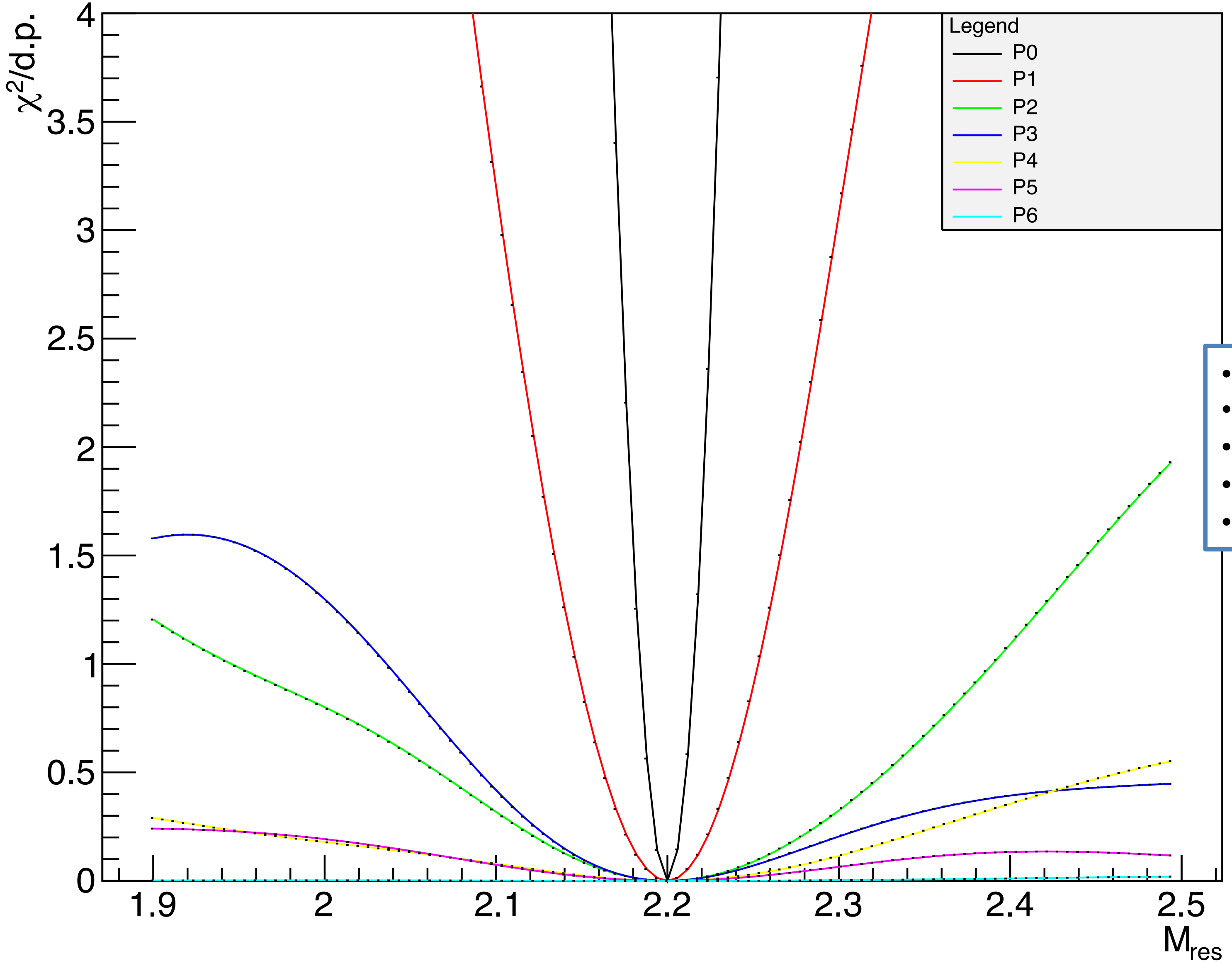

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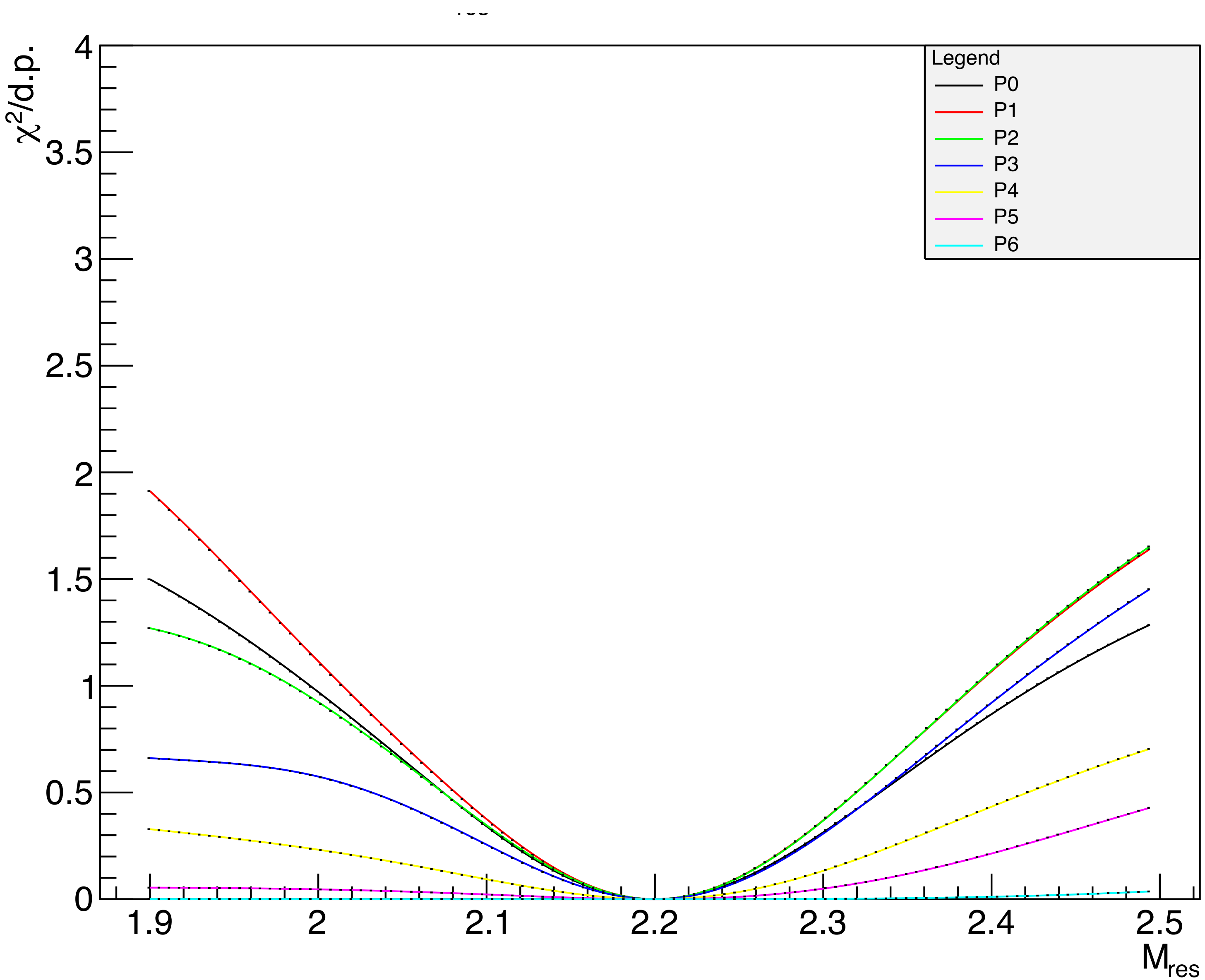

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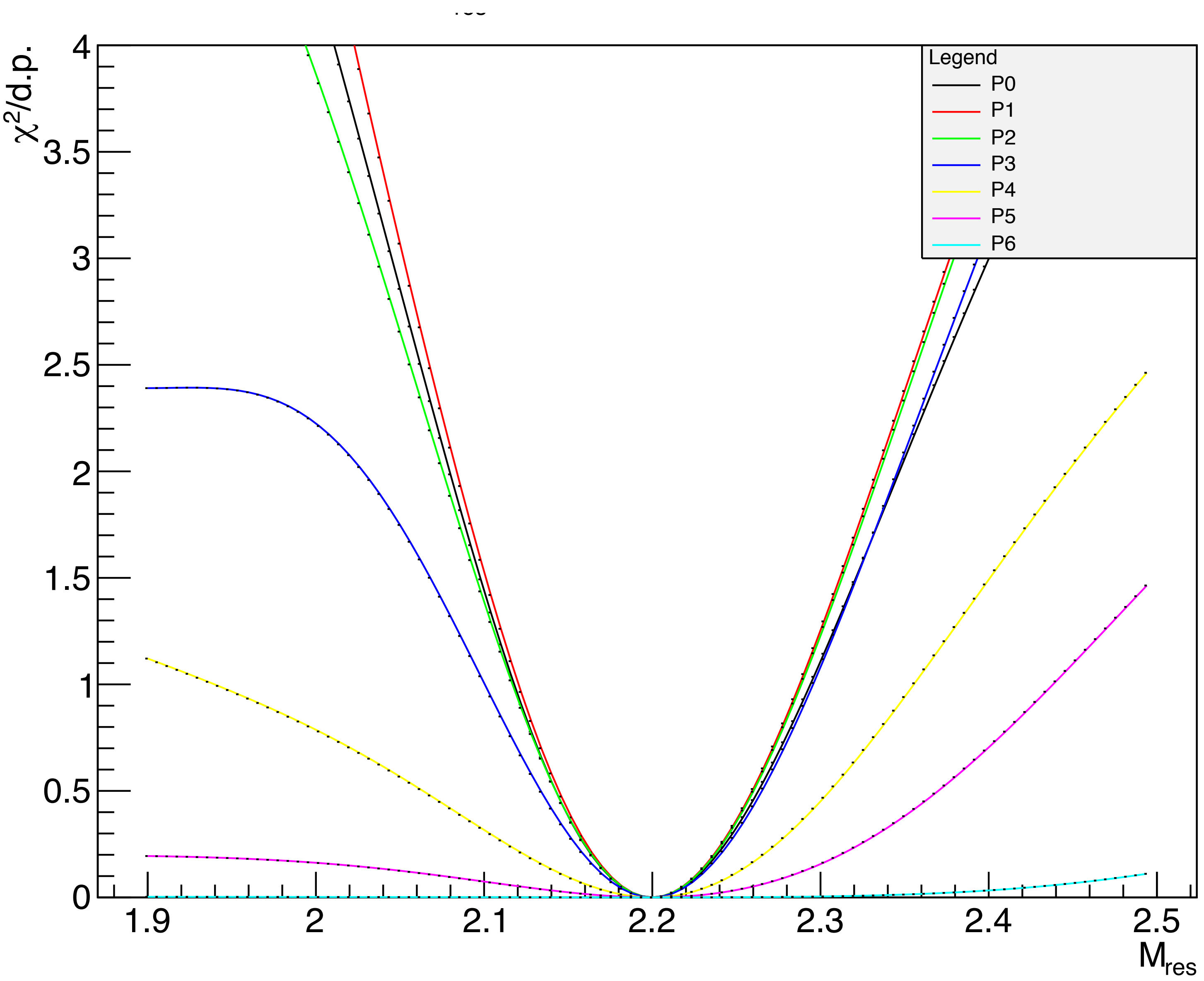

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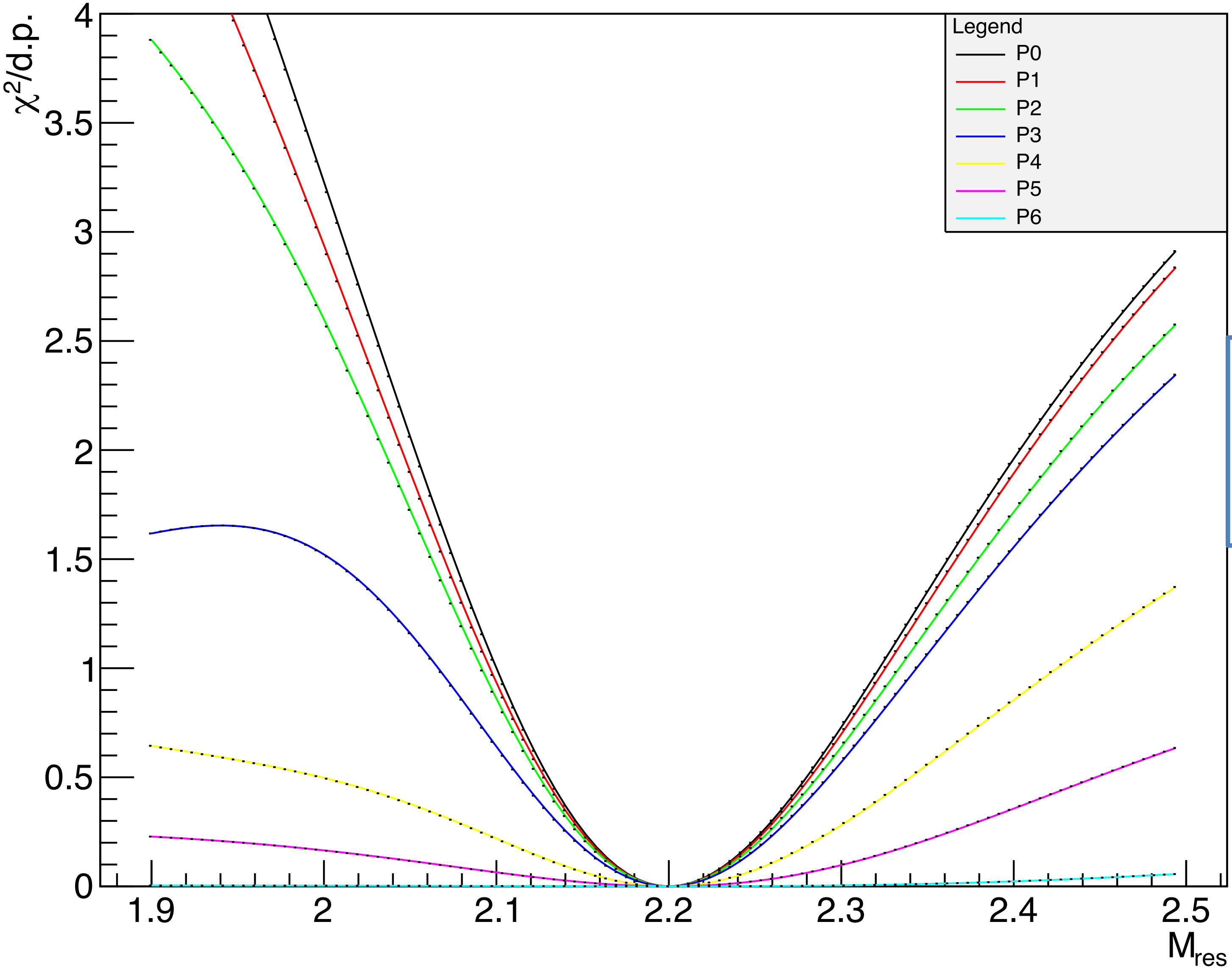

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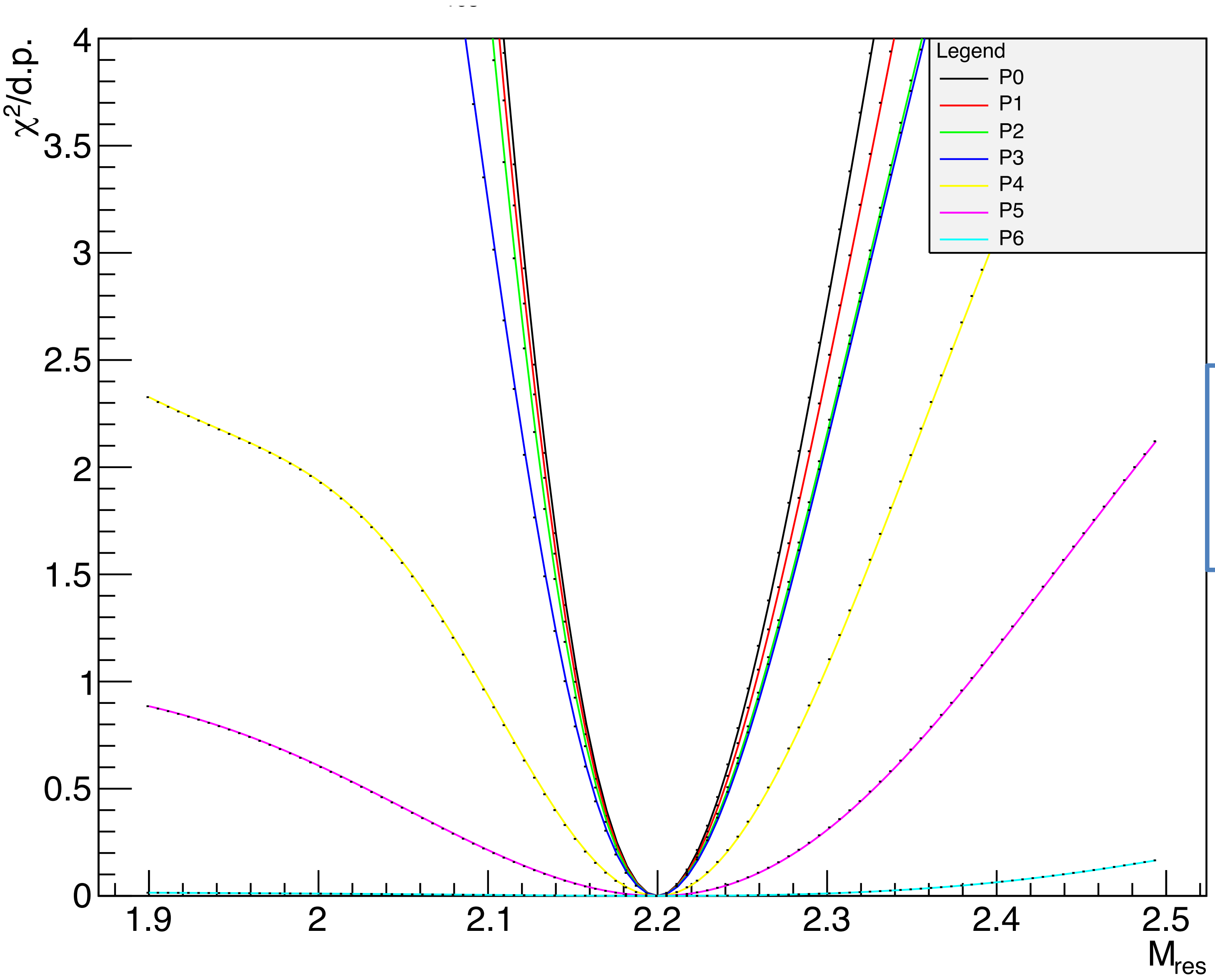

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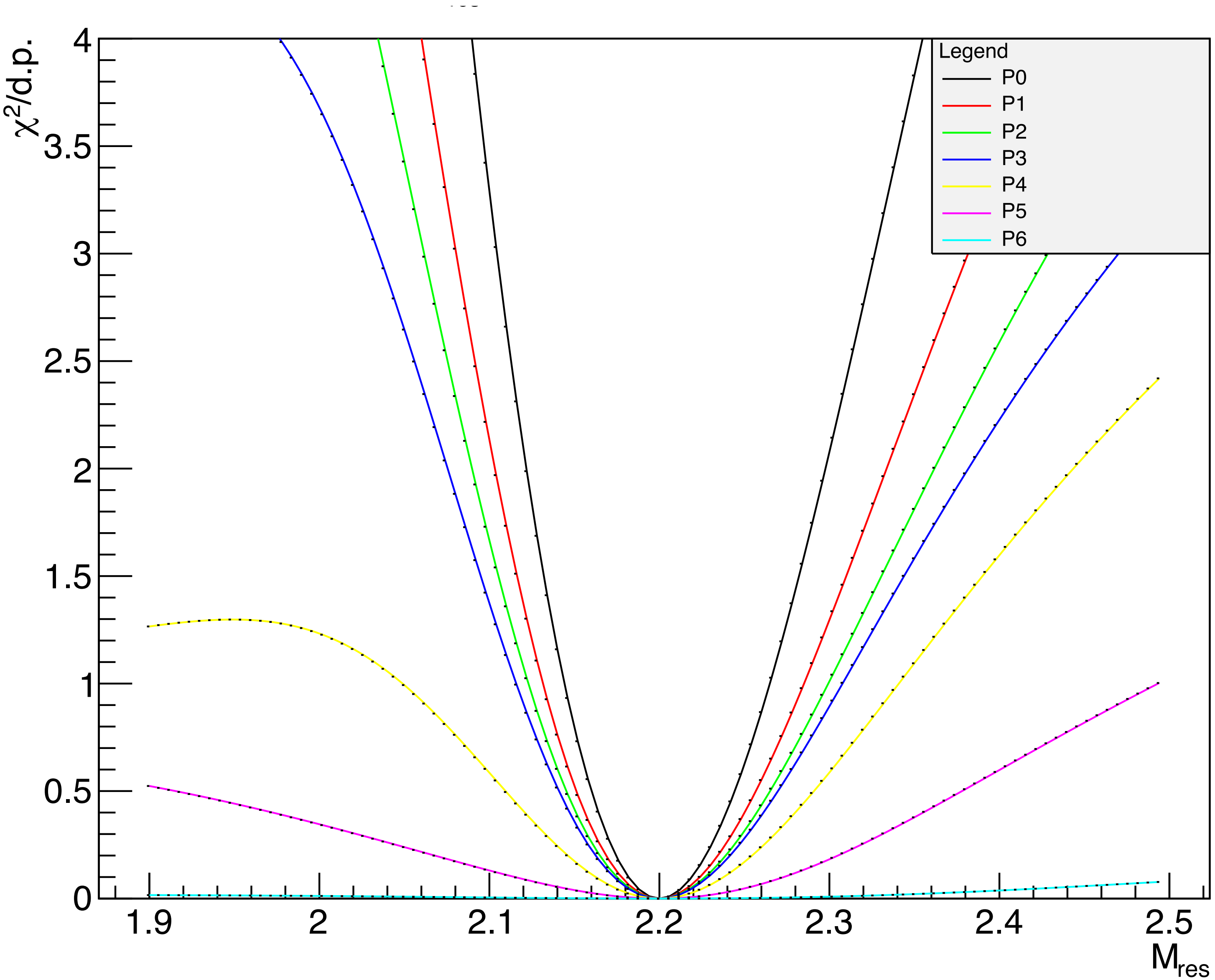

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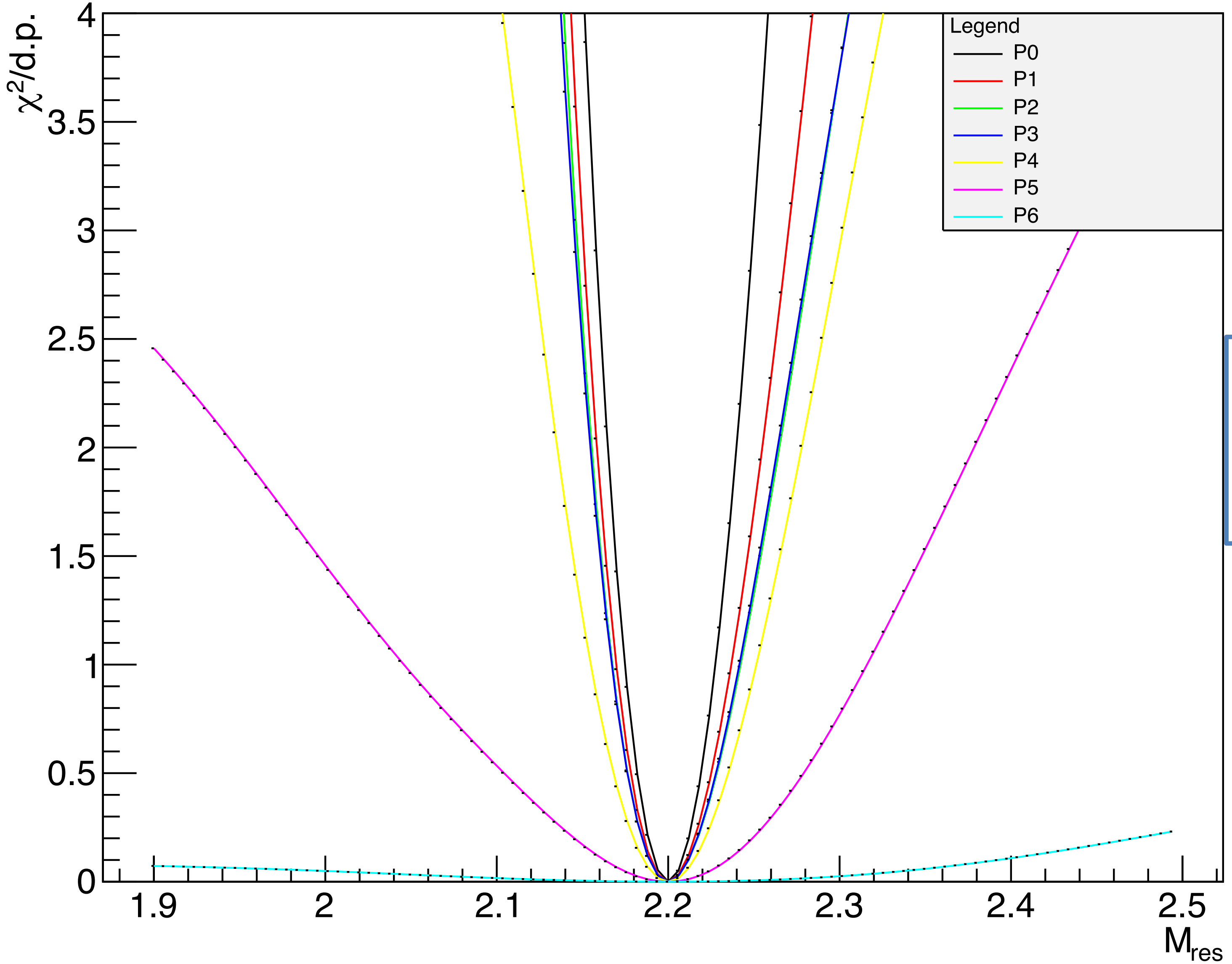

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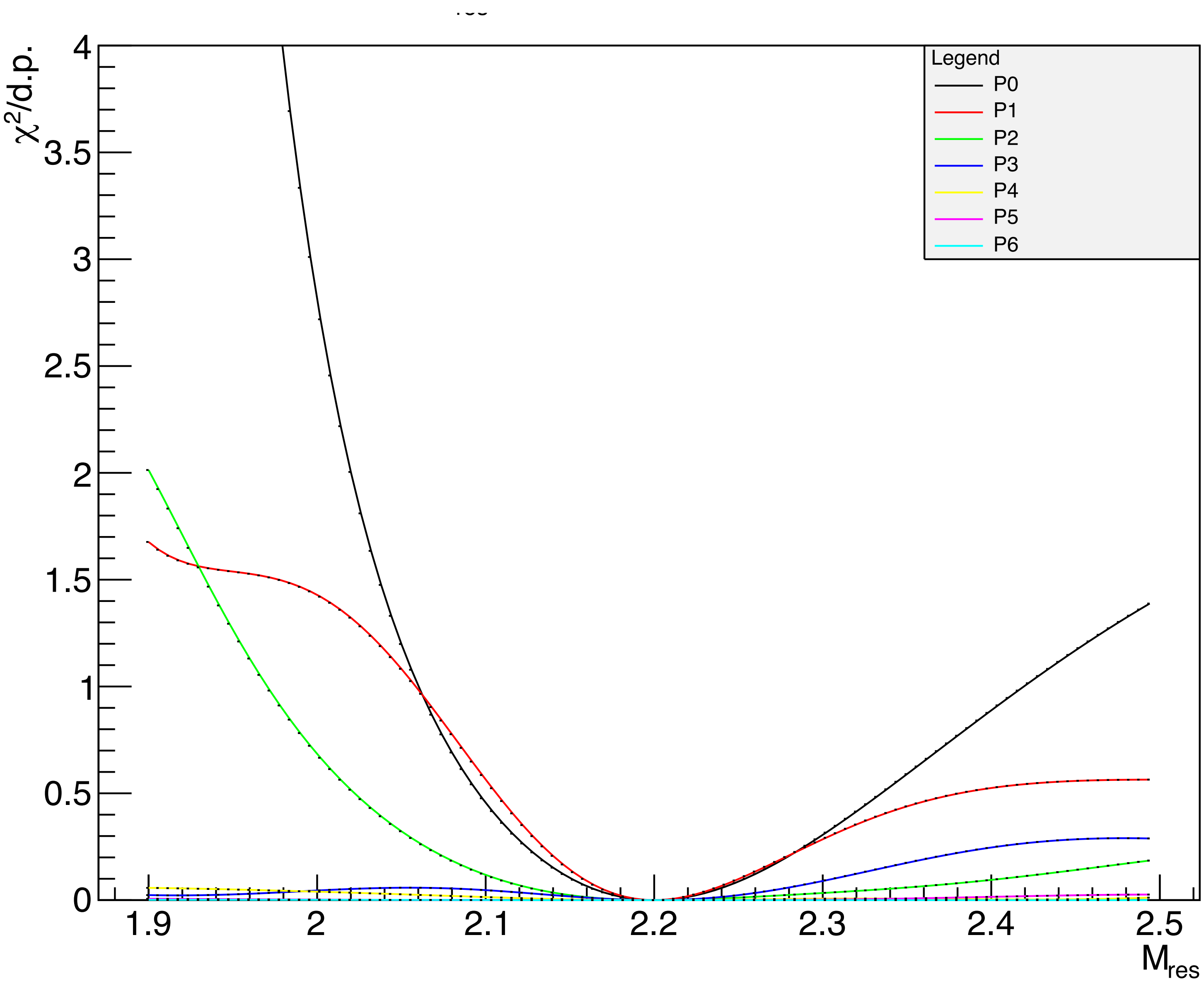

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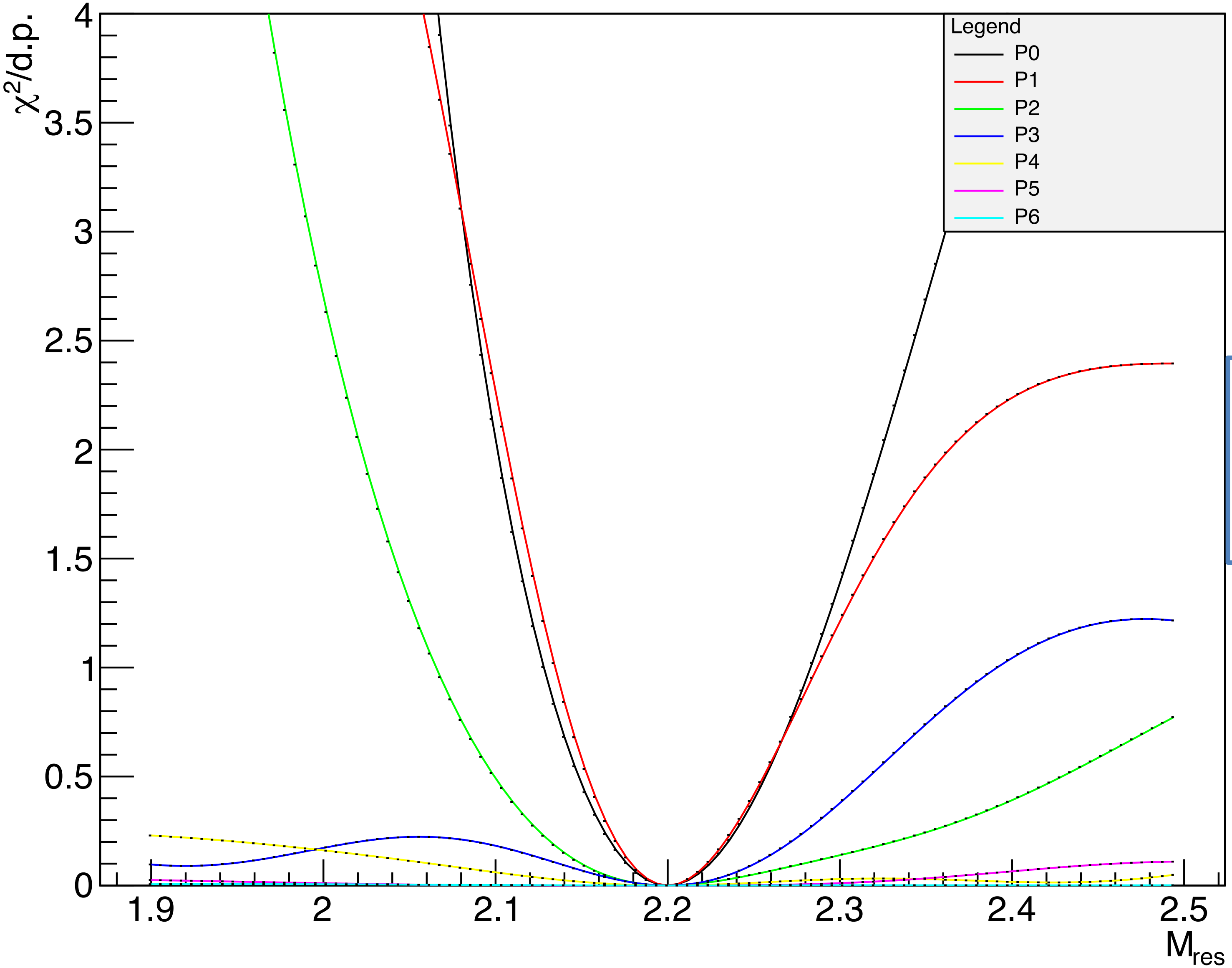

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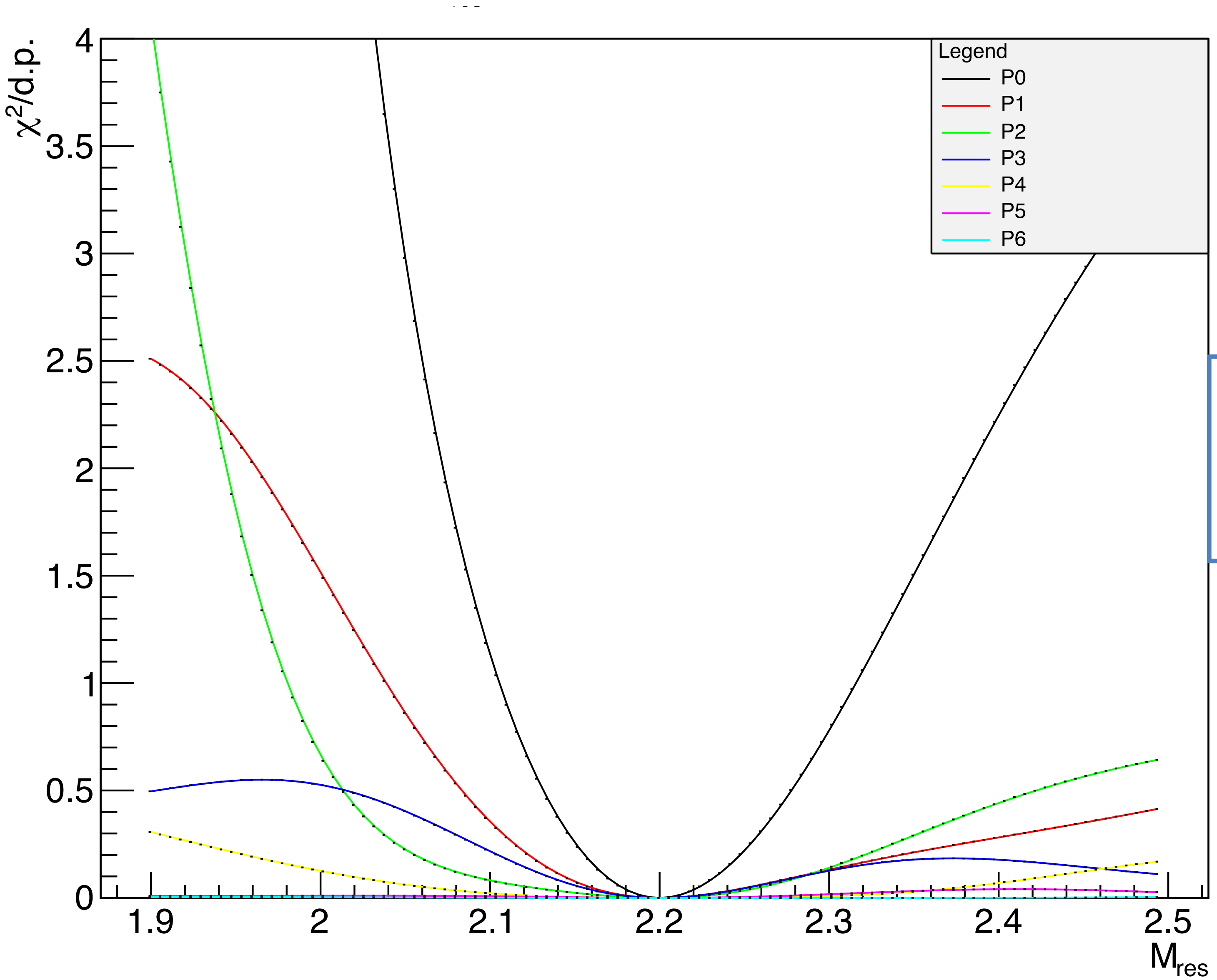

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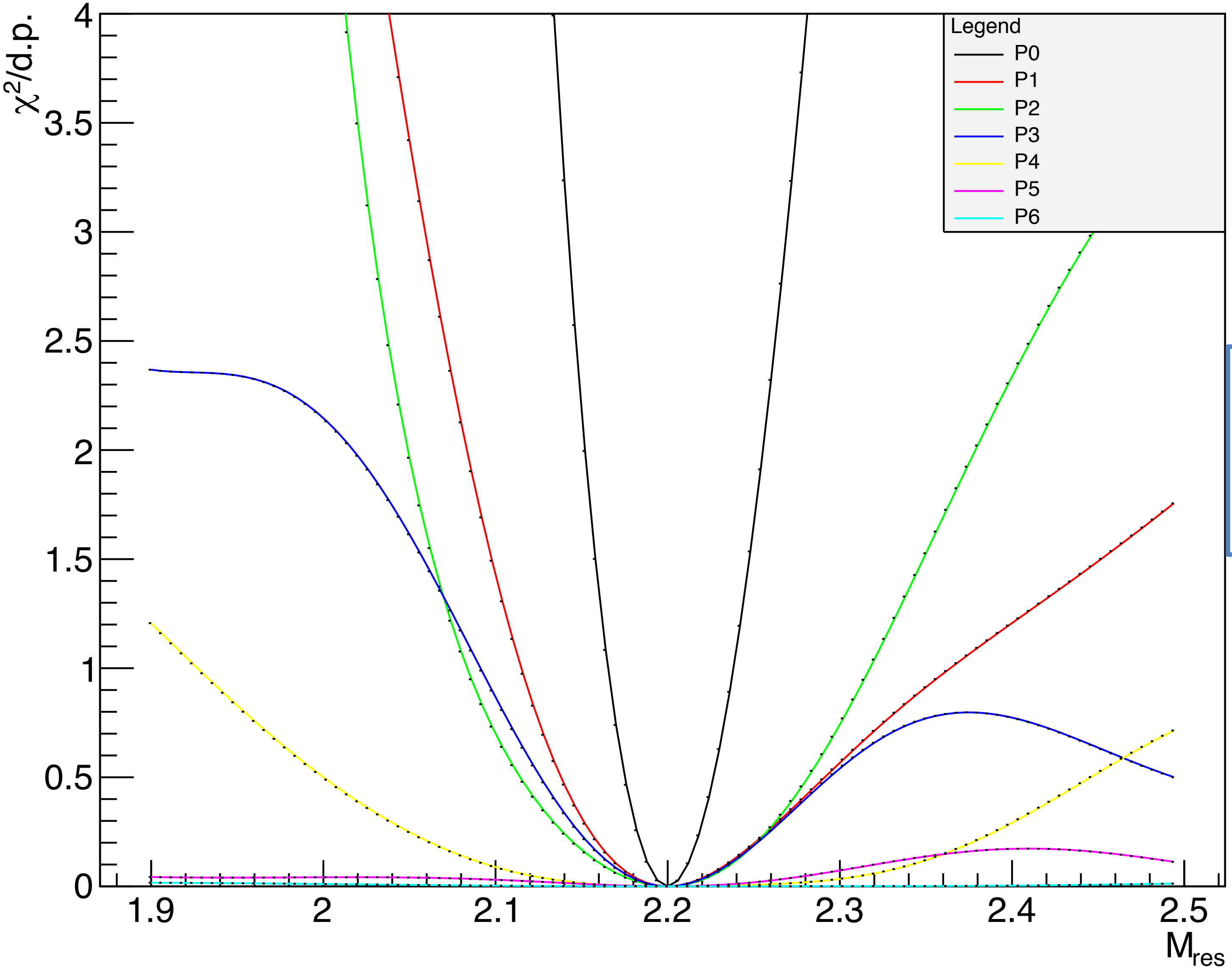

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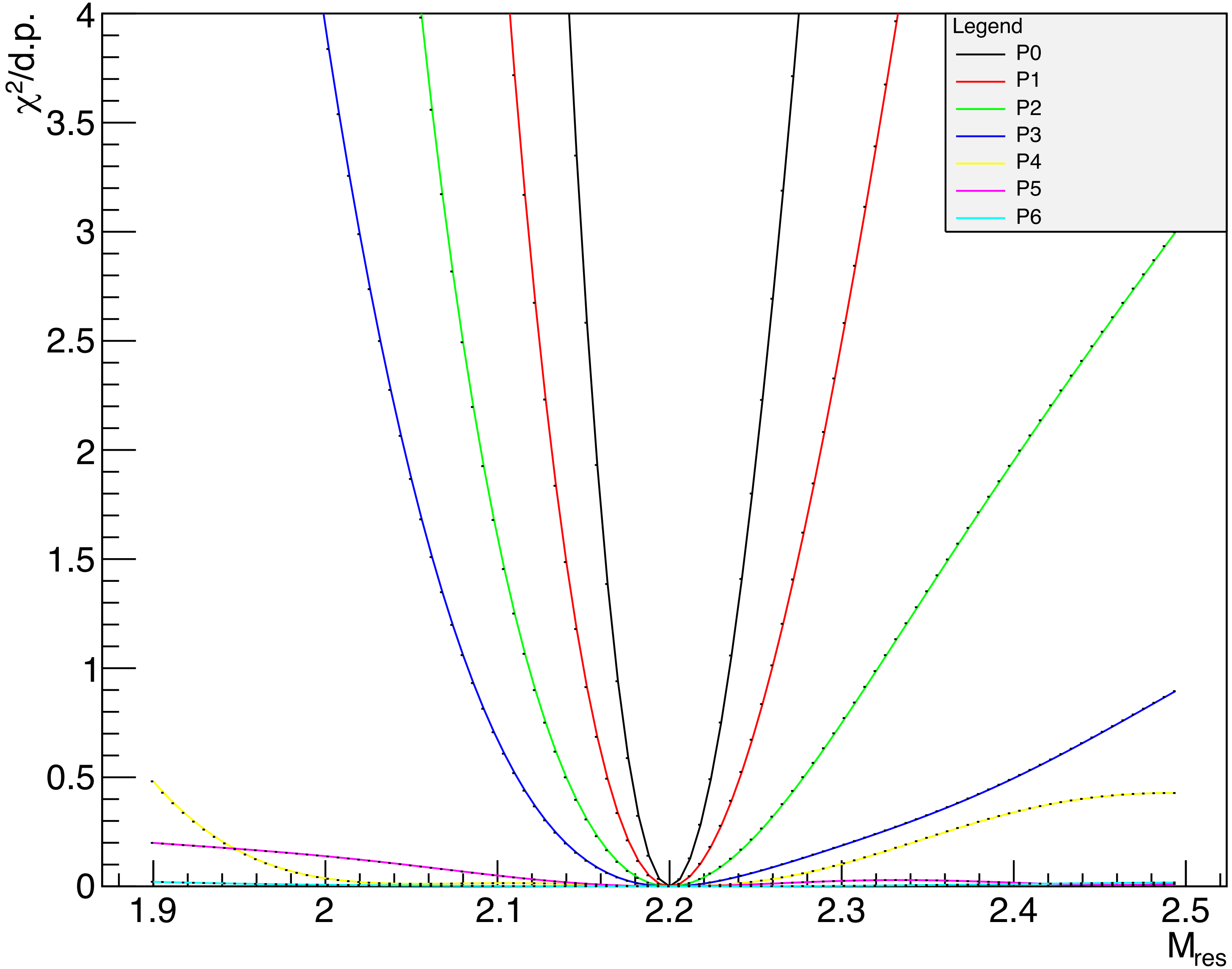

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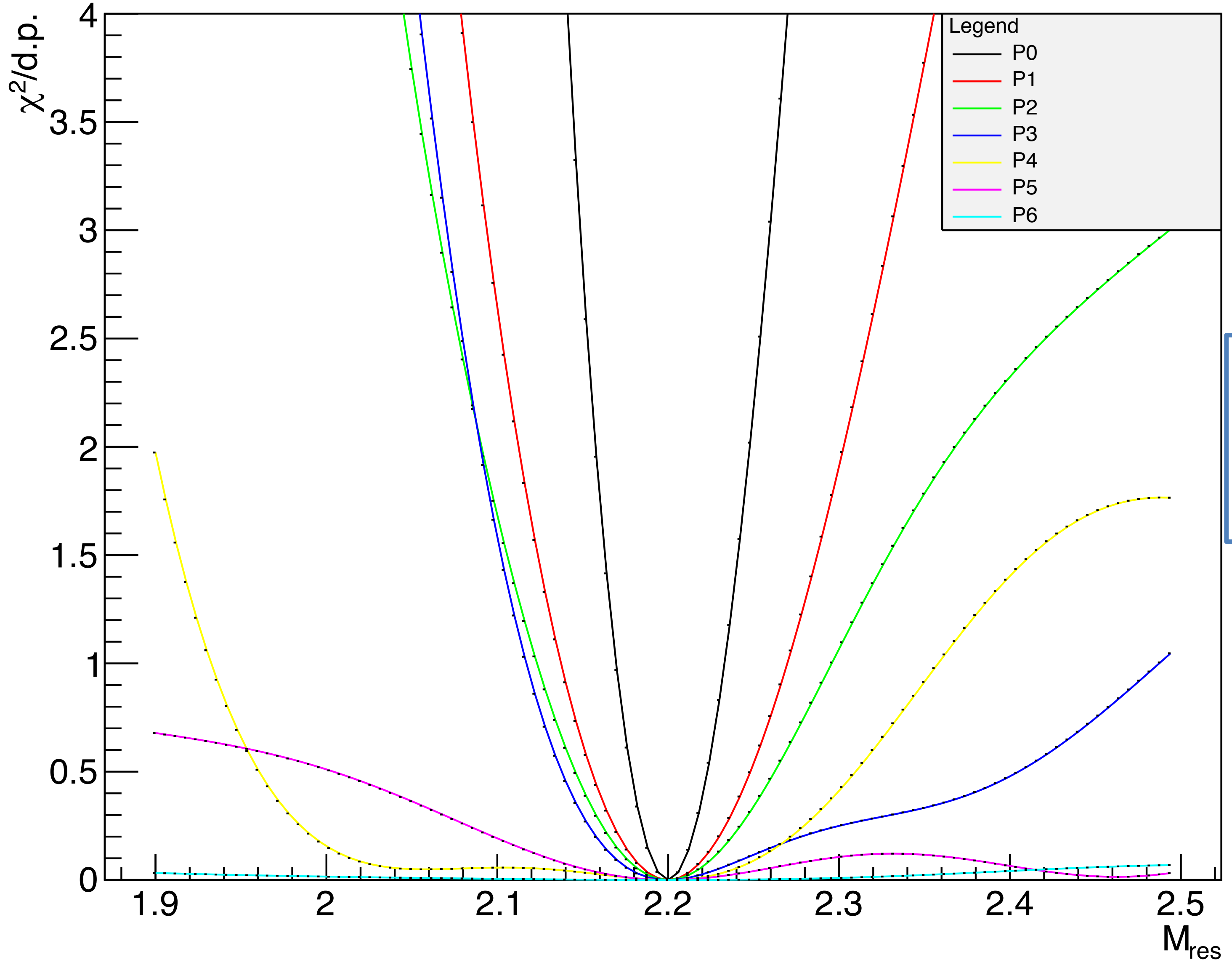

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