

B hadrons Lifetime Reports

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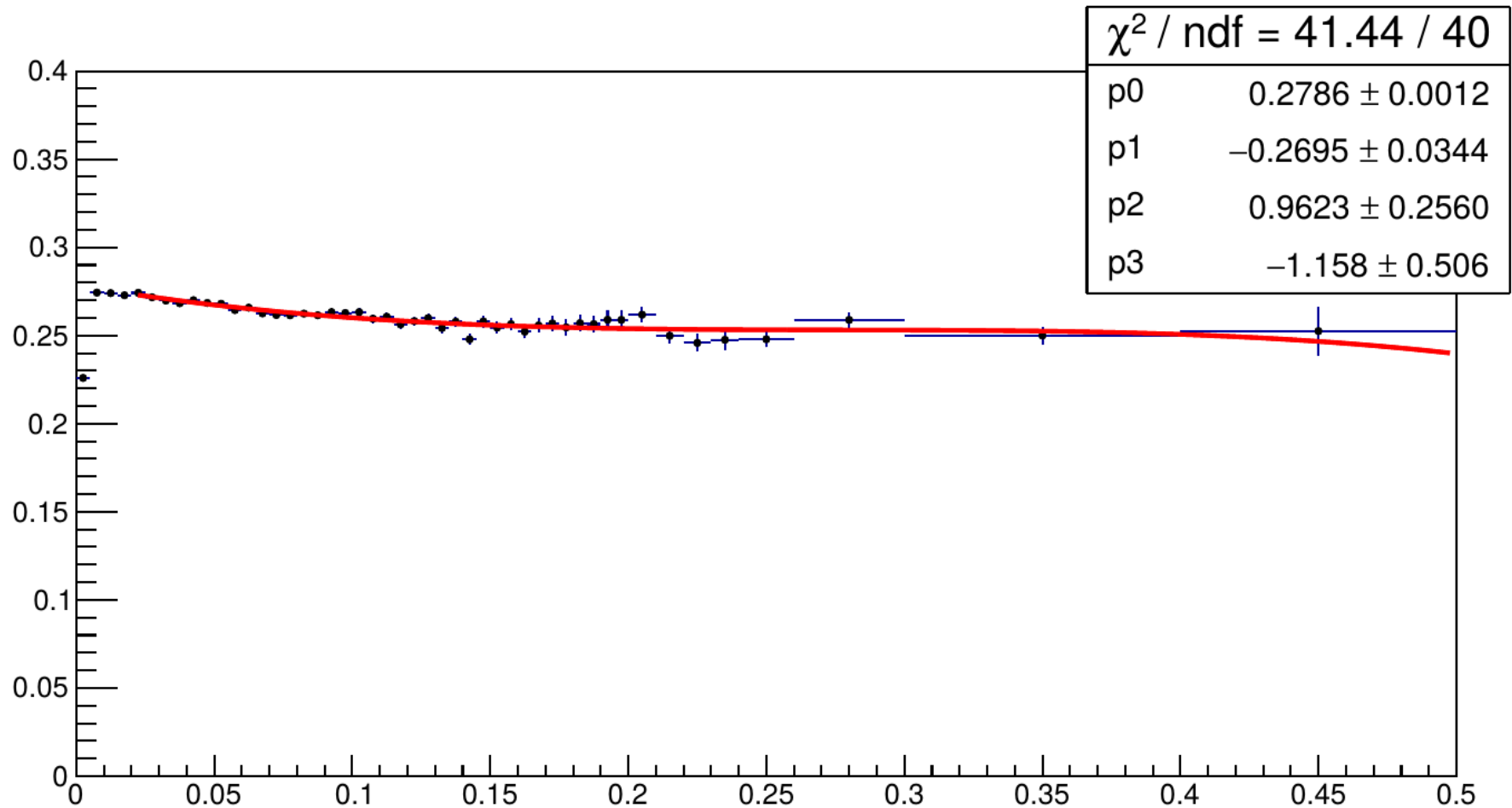


Usually we make the efficiency as "Reco / Gen". Where "Reco" is the MC after the whole chain of analysis (ct distribution of the selected events after reconstruction) and Gen is an exponential generated with the lifetime that was input of the MC. **This will be called nominal efficiency.**

Nuno's propose is: " what you can do is take the same MC Reco events you already use, but instead of taking the PDL with the reconstruction information, use matching to calculate the PDL at the generation level of the same candidates. That way you eliminate only the resolution($\text{RecoMatchGen} / \text{Gen}$). **This will be called optional efficiency.**

To test this exercise we will work with the references channel, $B^+ \rightarrow J\psi K^+$. We will do the efficiency again with the optional method and then we will measure the lifetime with that efficiency. So we can know if the resolution is important or not.

Nominal efficiency



Octional efficiency

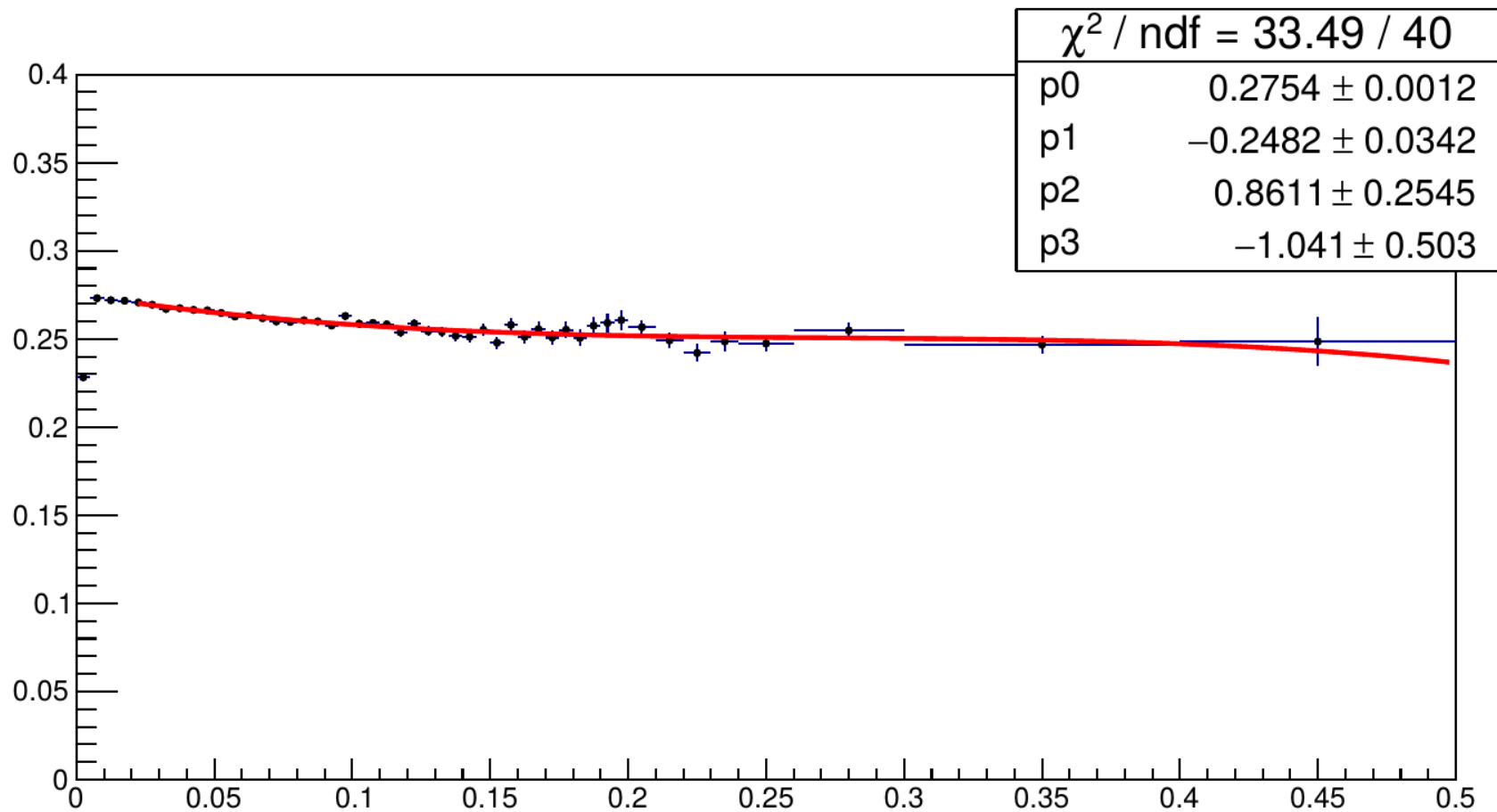


Table: $B^+ \rightarrow J/\psi K^+$ Lifetime fit values for different efficiencies

Efficiency	ct (μm).
nominal	491.6 ± 0.8
optional	491.2 ± 0.8

We found a difference of 0.4 microns. Which I consider is covered by our systematic sources.