Update of Ω_c^0 lifetime measurement

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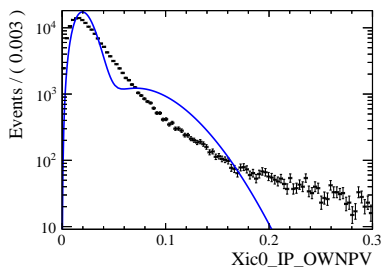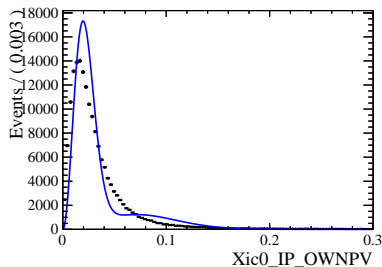Ω_c^0 *lifetime measurement meeting*

May 8, 2018

Fit to IP of prompt MC sample

- Double Maxwell distribution

$$f(x; \sigma) = \sqrt{\frac{2}{\pi}} \frac{x^2 e^{-x^2/(2\sigma^2)}}{\sigma^3}, \quad x \geq 0$$
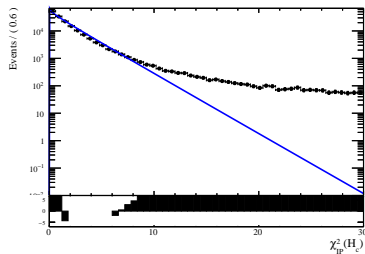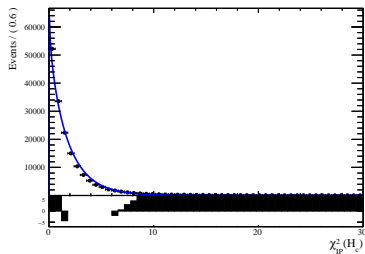
- Do not describe the signal well

Fit to IPCHI2 of prompt MC sample
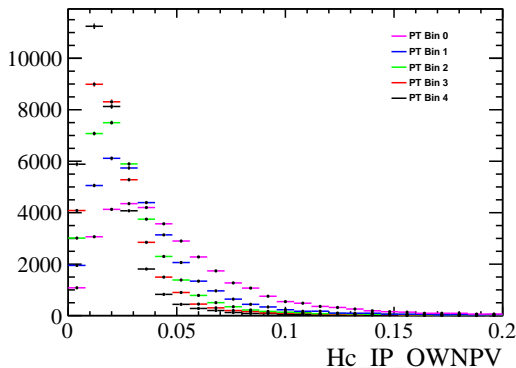
- χ^2 distribution

$$\frac{1}{2^{k/2}\Gamma(k/2)} \, x^{k/2-1} e^{-x/2}$$

- Do not describe the signal well

IP distributions in PT bins

- Binning
  $[0.0, 1990.0, 3000.0, 4100.0, 5770.0, 20000]$ GeV
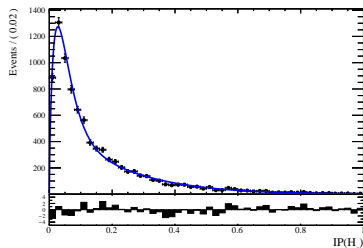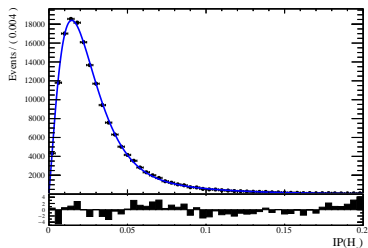- Maxwell distribution still dose not work in p_T bins

Fit to IP of MC sample

- Double Γ distribution

$$f(x) = \sqrt{\frac{2}{\pi}} \frac{x^{\gamma-1} e^{-x/\beta}}{\Gamma(\gamma) \times \beta^{\gamma}}, \quad x \geq 0$$

- Prompt (left) and Secondary (right)
- Describe the signal well

Fit to IPCHI2 of MC sample

- Double Γ distribution

$$f(x) = \sqrt{\frac{2}{\pi}} \frac{x^{\gamma-1} e^{-x/\beta}}{\Gamma(\gamma) \times \beta^{\gamma}}, \quad x \geq 0$$

- Prompt (left) and Secondary (right)
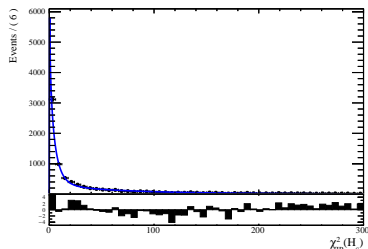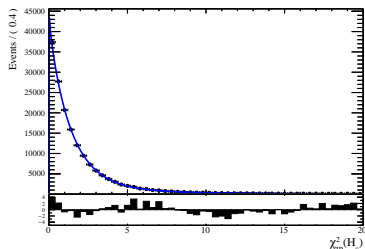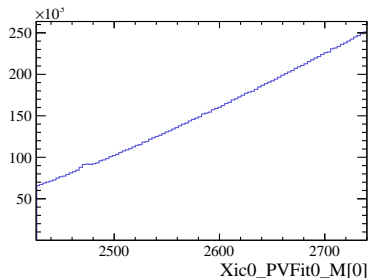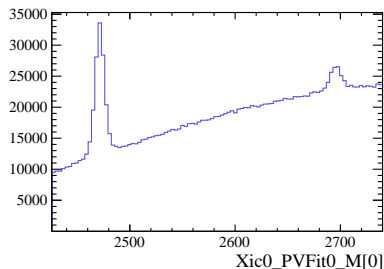- Describe the signal well

Turbo line output of 2017 (MagDown only)

- `Hlt2CharmHadXic0ToPpKmKmPipTurbo` (left)
- `Hlt2CharmHadXic0ToPpKmKmPip_LTUNBTurbo` (right)

Backup

MC sample

- Truth-matched Ω_c^0 MC sample
  - Prompt: require c quark as mother
  - Secondary: require b hadron as mother
- No further cuts applied