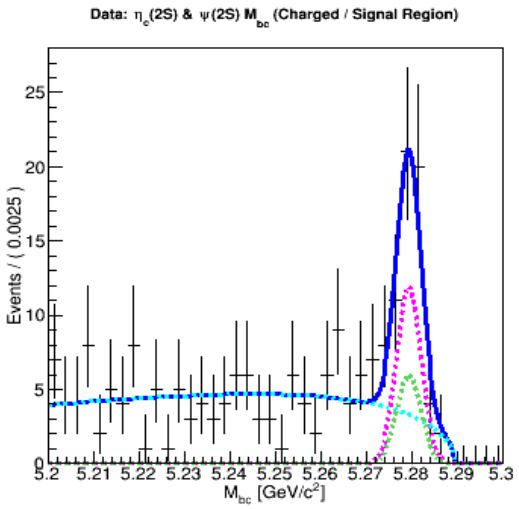
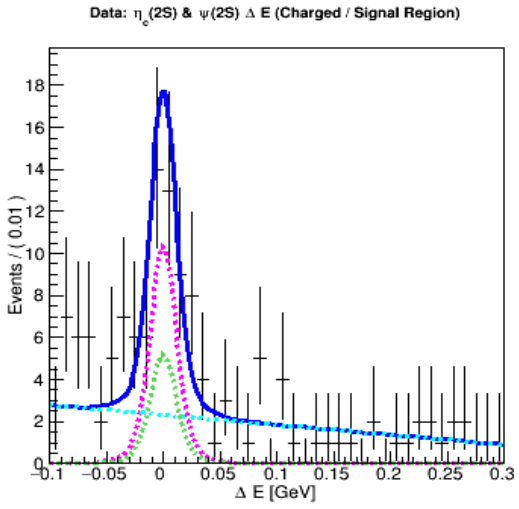
Box Opened

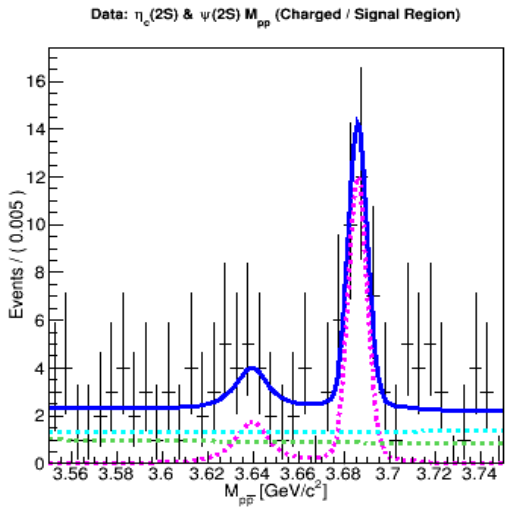
20170601

$$B^+ \to \eta_c(2S), \psi(2S) K^+ \to p\bar{p}K^+$$

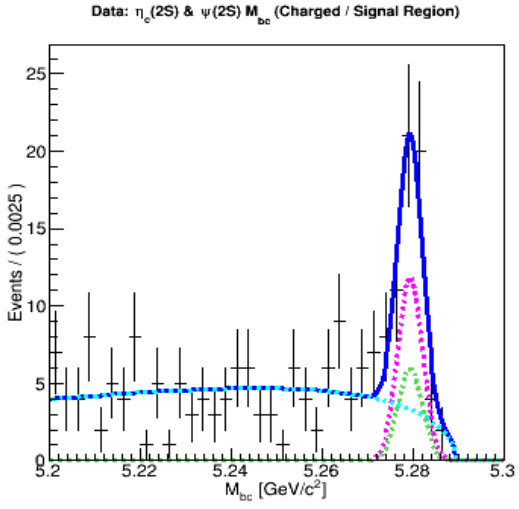
Poisson errors

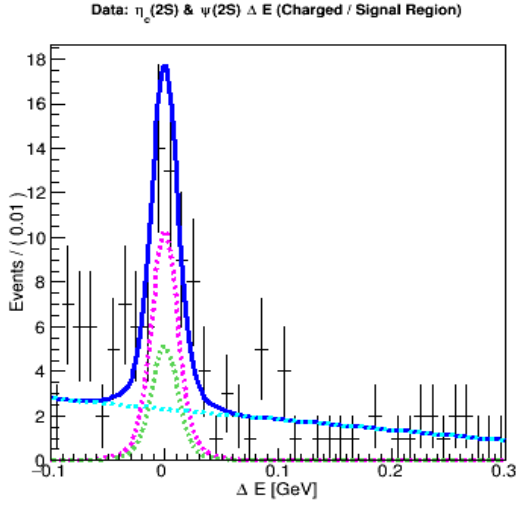


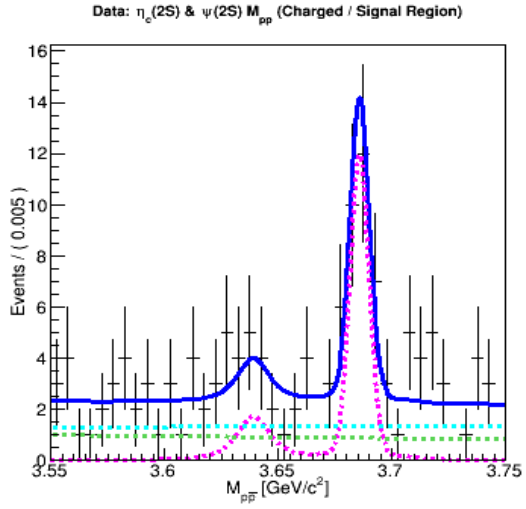




sqrt(sum(weights^2)) errors





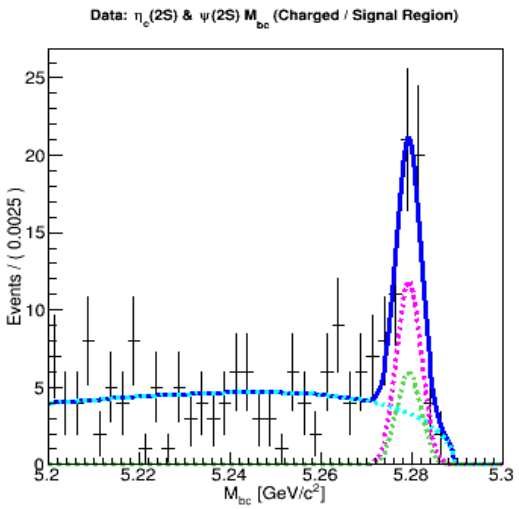


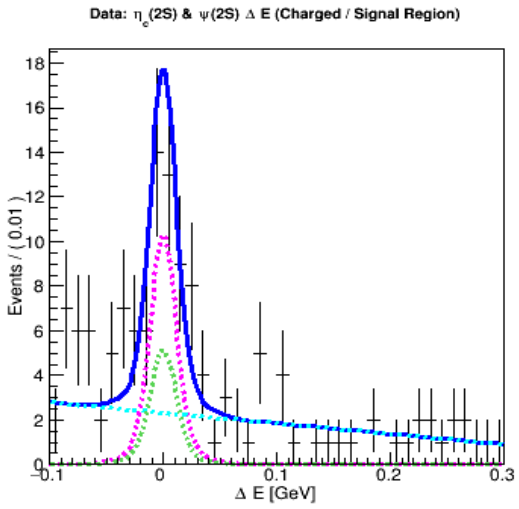
Box Opened

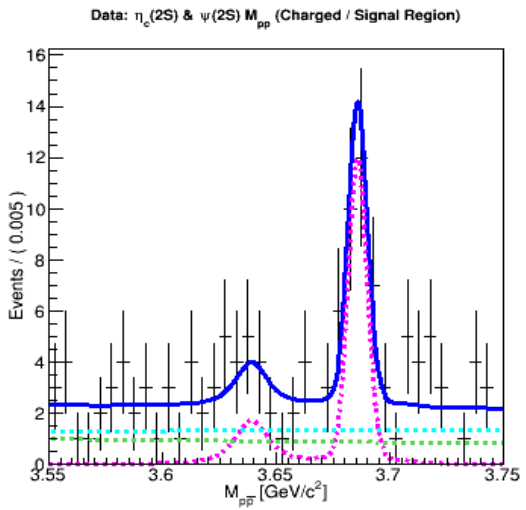
20170601

$$B^+ \to \eta_c(2S), \psi(2S) K^+ \to p\bar{p}K^+$$

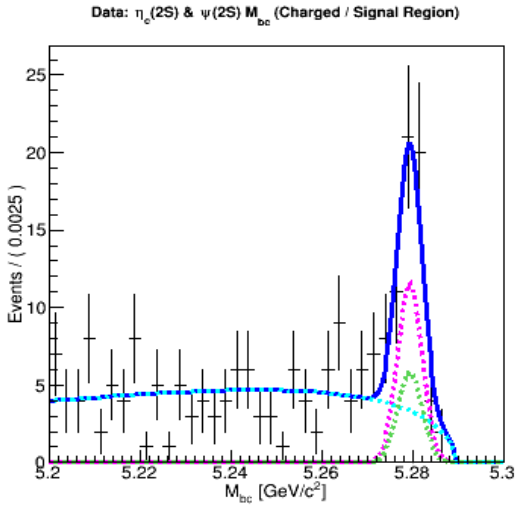
$\psi(2S)$ mass fixed : 3.6858 GeV/c^2

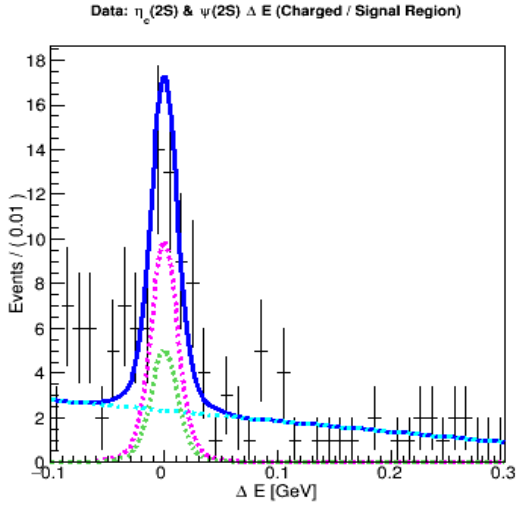


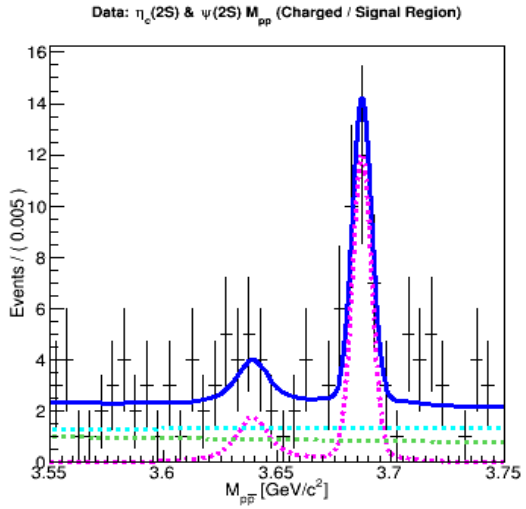




$\psi(2S)$ mass floated : 3.6872 $\pm$ 0.0011 GeV/c^2





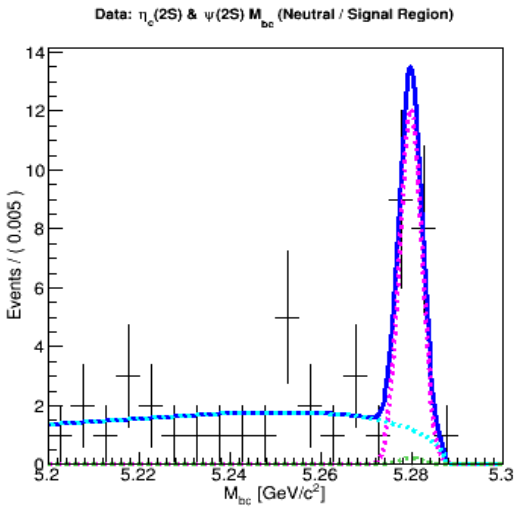


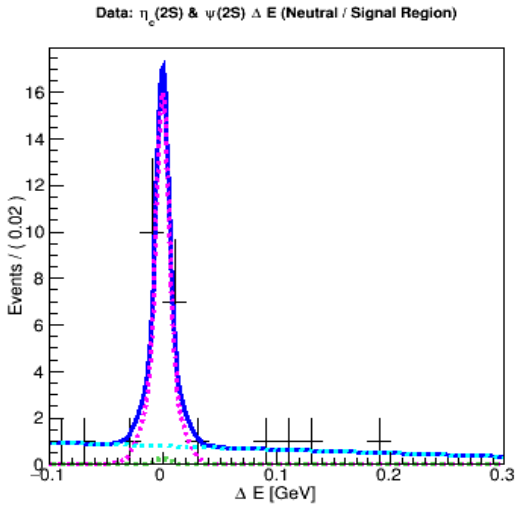
Box Opened

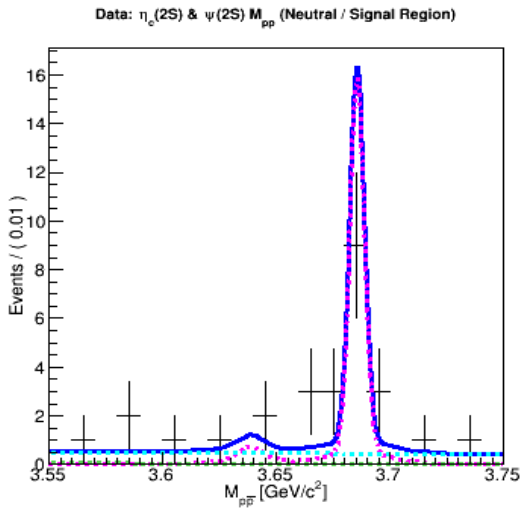
20170601

$$B^0 \to \eta_c(2S), \psi(2S) K_S^0 \to p\bar{p}K_S^0$$

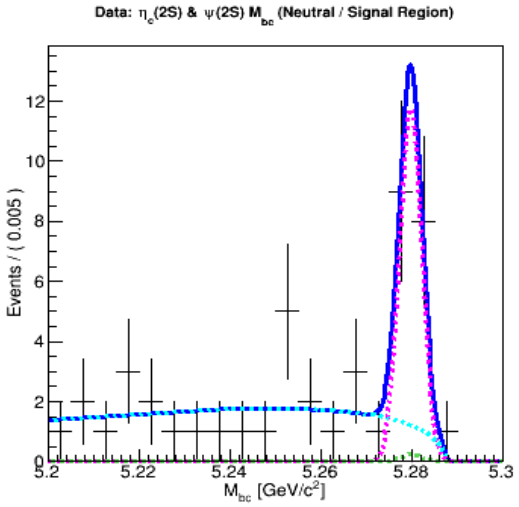
$\psi(2S)$ mass fixed : 3.6855 GeV/c^2

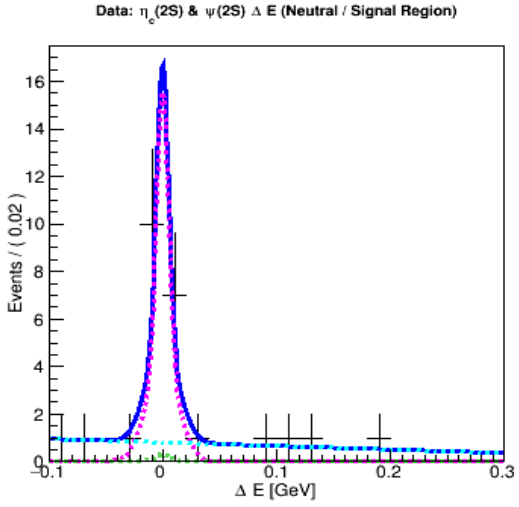


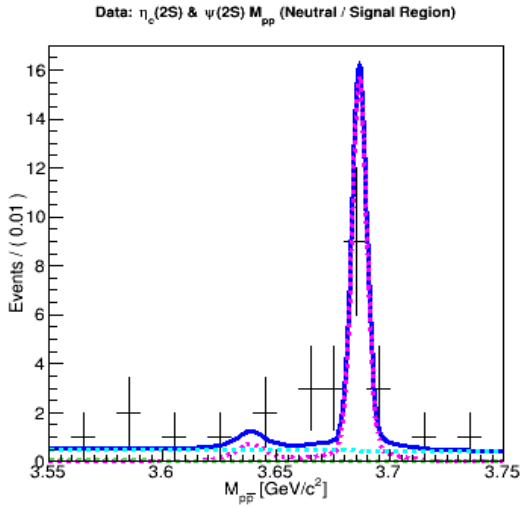




$\psi(2S)$ mass floated : 3.6864 $\pm$ 0.0012 GeV/c^2



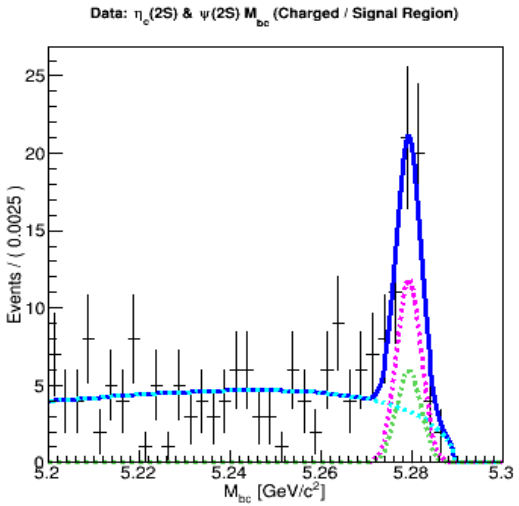


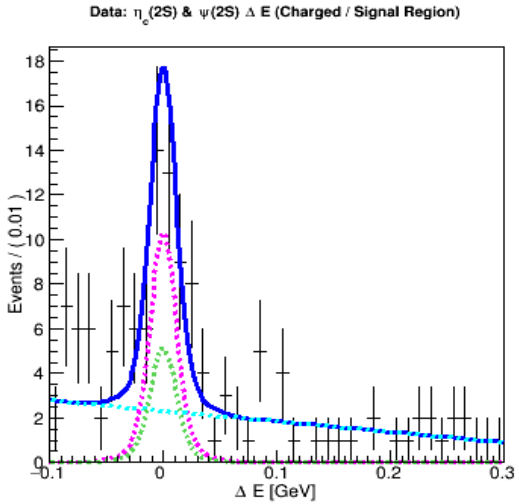


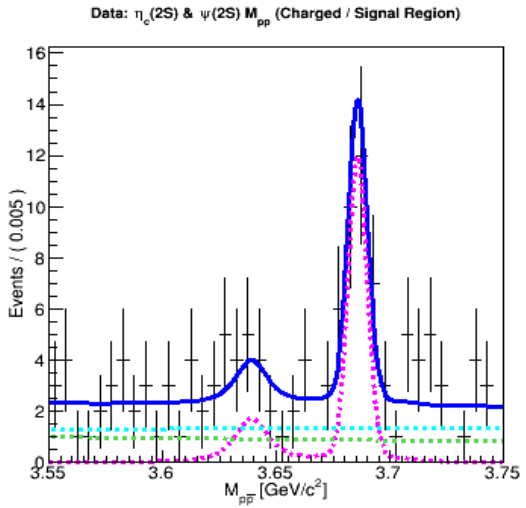
Box Opened

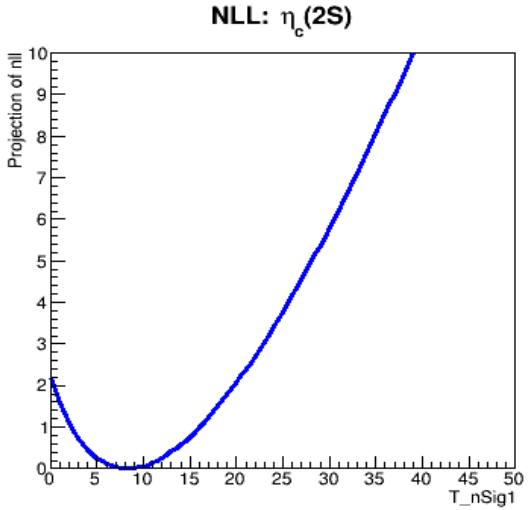
20170601

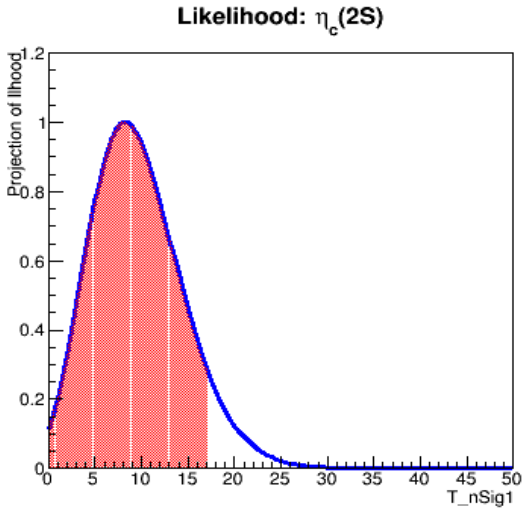
$$B^+ \to \eta_c(2S), \psi(2S) K^+ \to p\bar{p}K^+$$



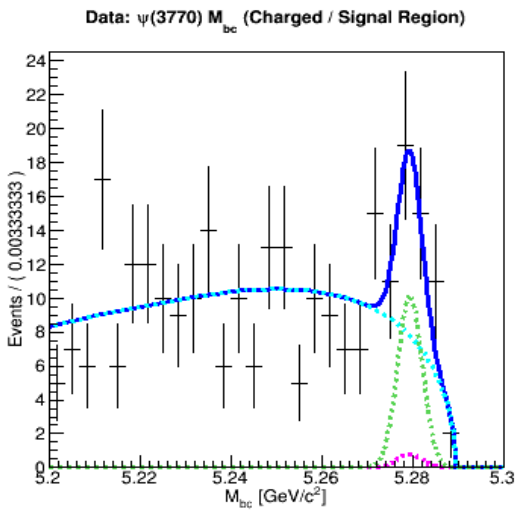


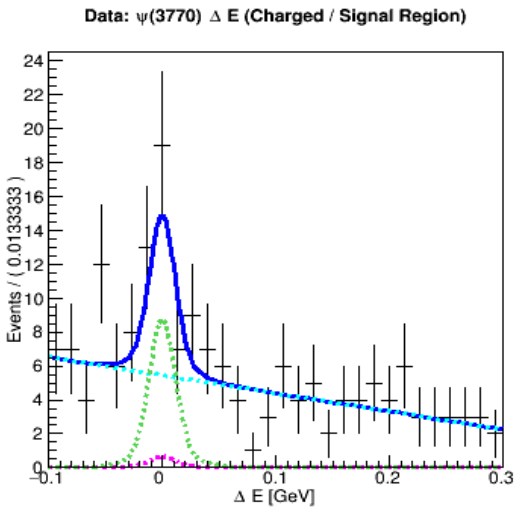


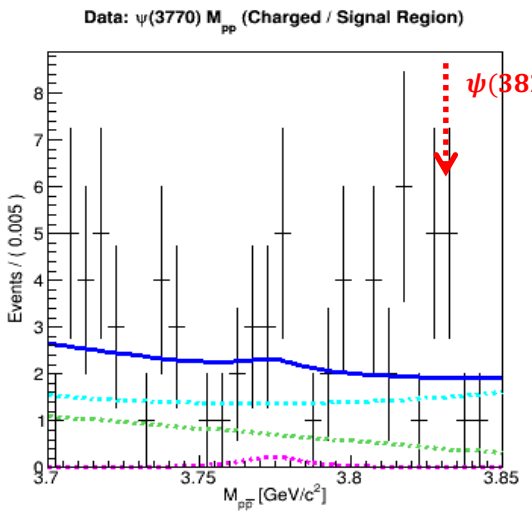


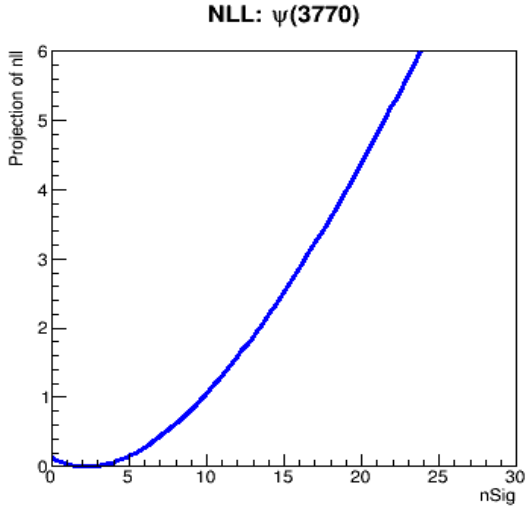


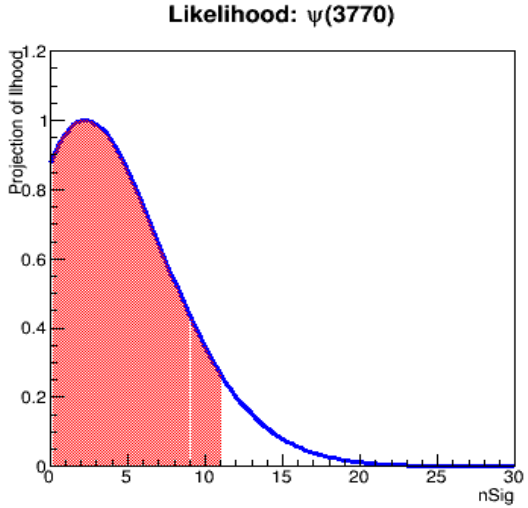
$$B^+ \to \psi(3770) K^+ \to p\bar{p}K^+$$



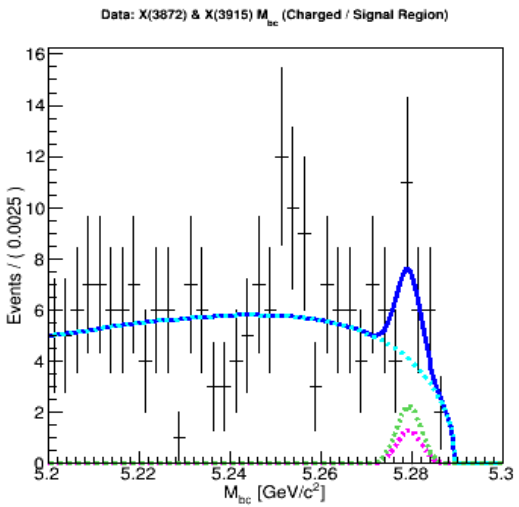


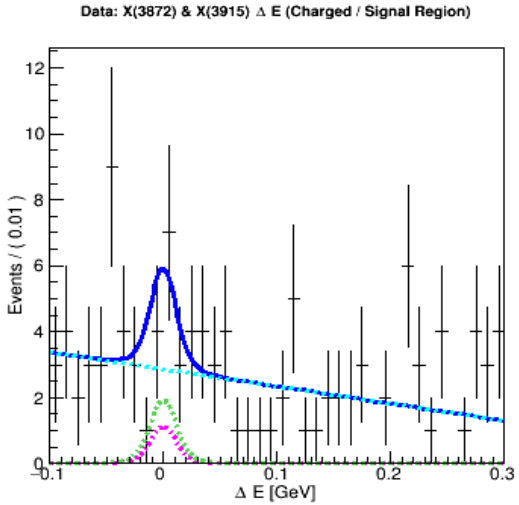


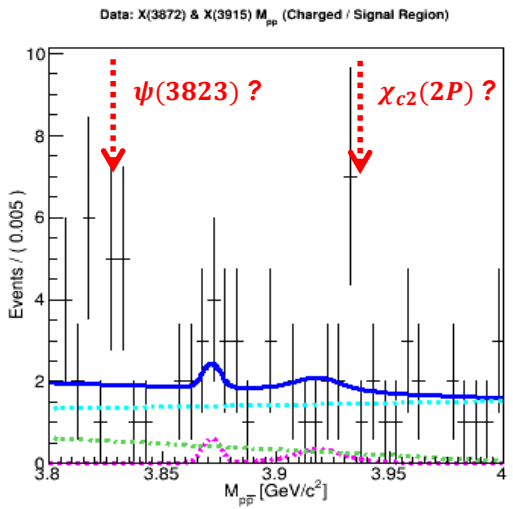


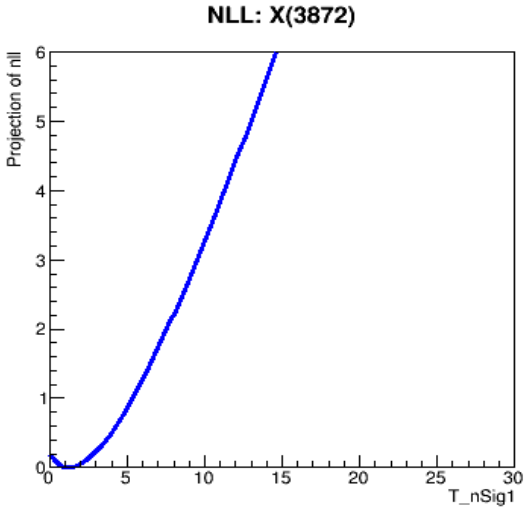


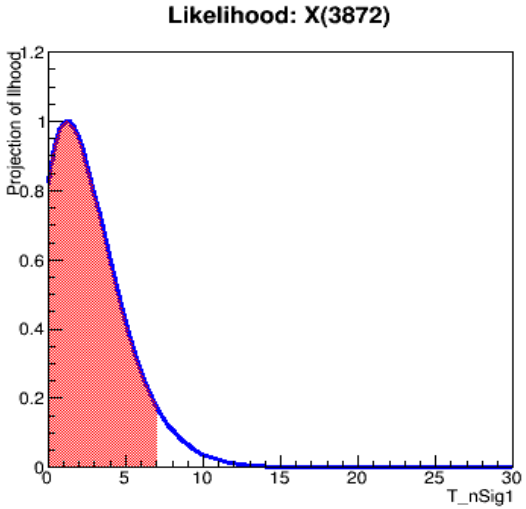
$$B^+ \to X(3872), X(3915)K^+ \to p\bar{p}K^+$$



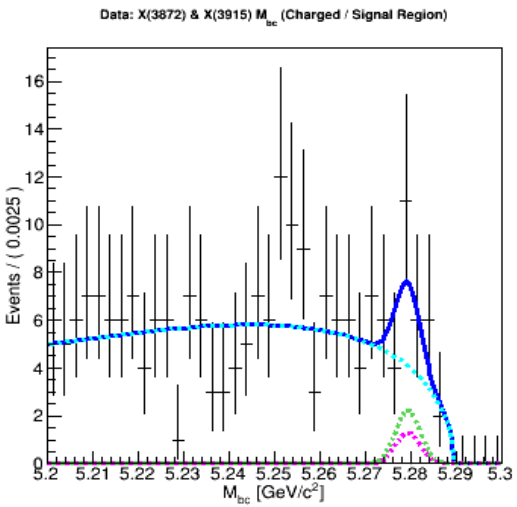


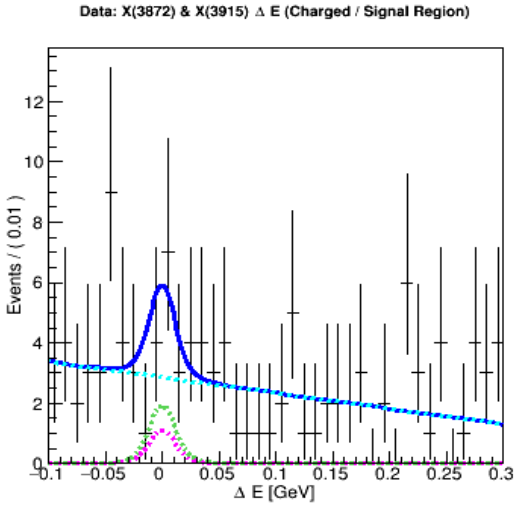


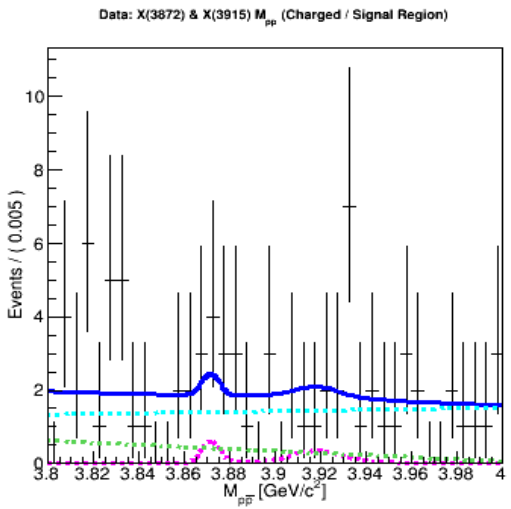




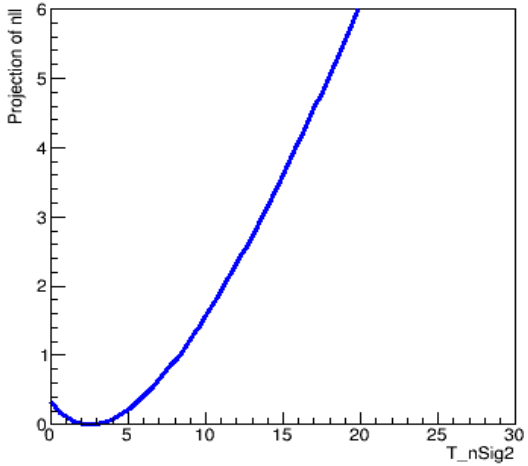
$$B^+ \to X(3872), X(3915) K^+ \to p\bar{p}K^+$$



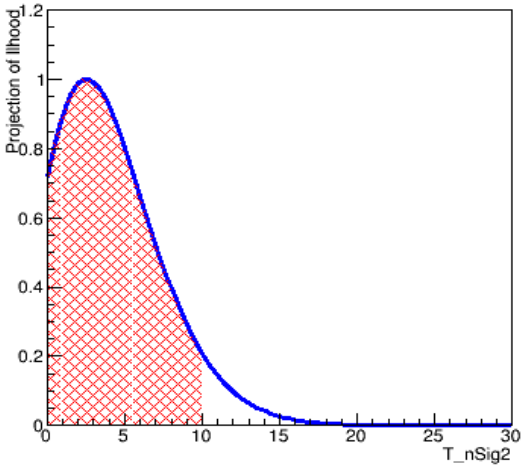




NLL:X(3915)

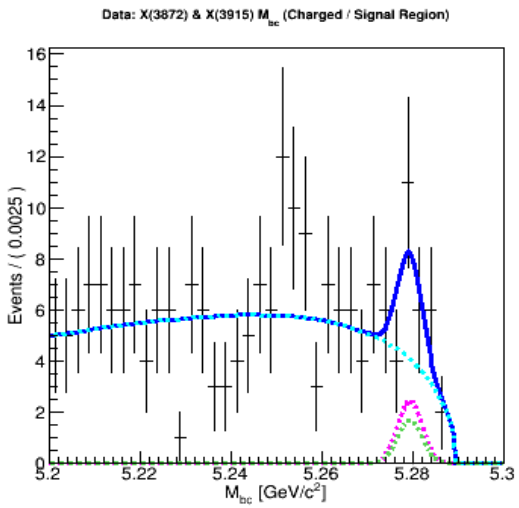


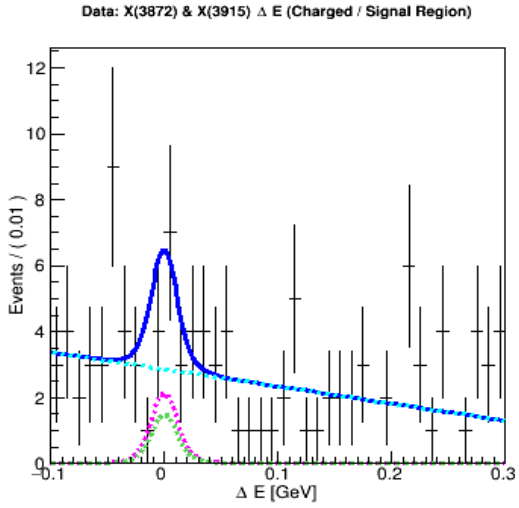
Likelihood:X(3915)

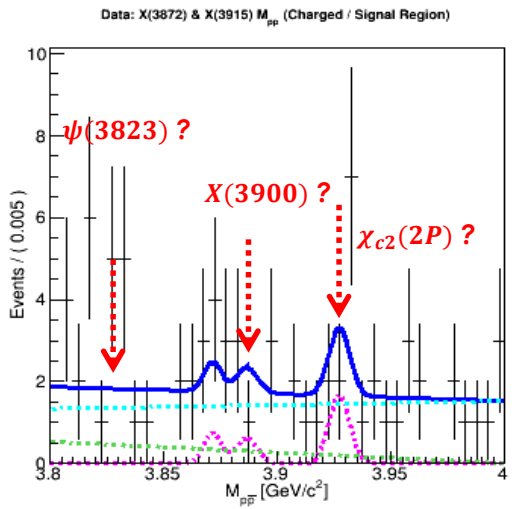


$$B^+ \to X(3872), X(3915) K^+ \to p\bar{p}K^+$$

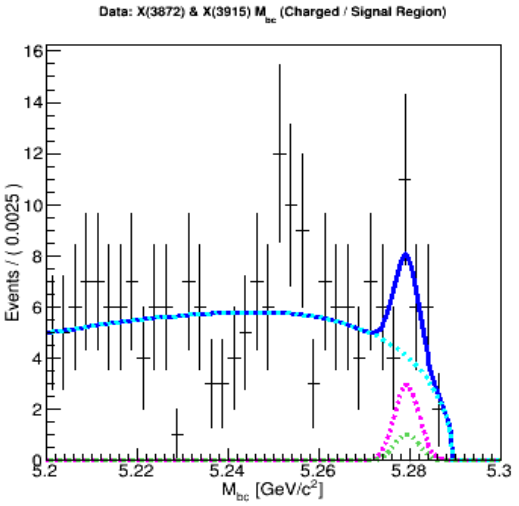
mass fixed

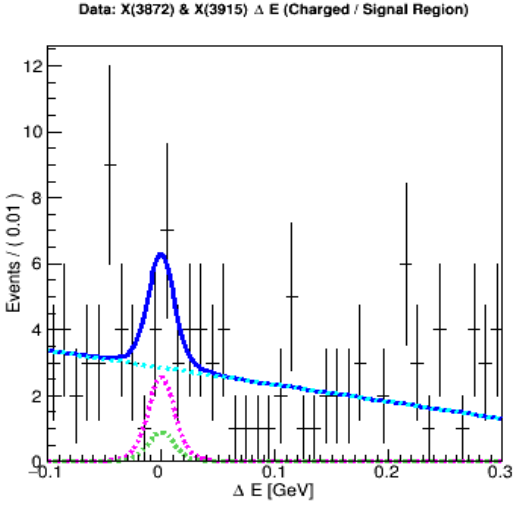


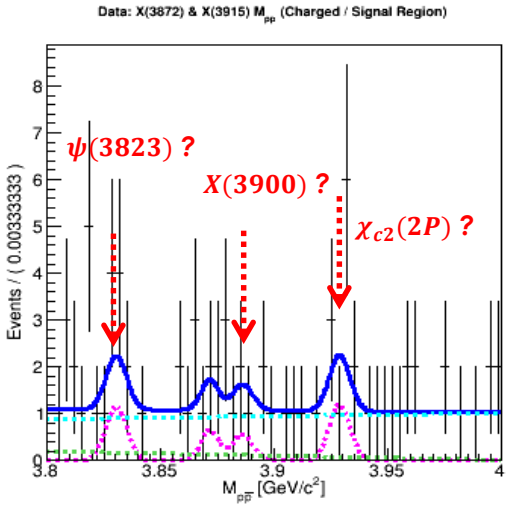




mass floated



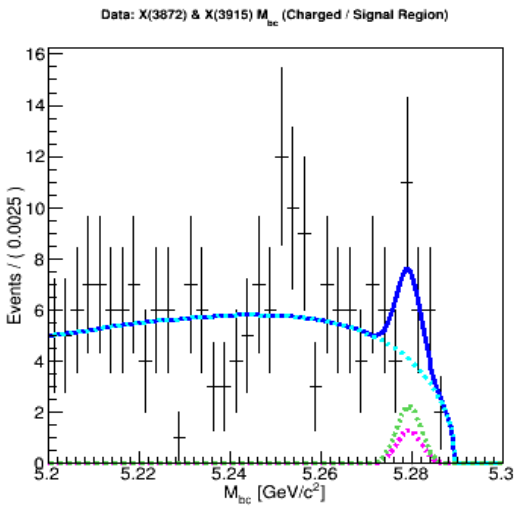


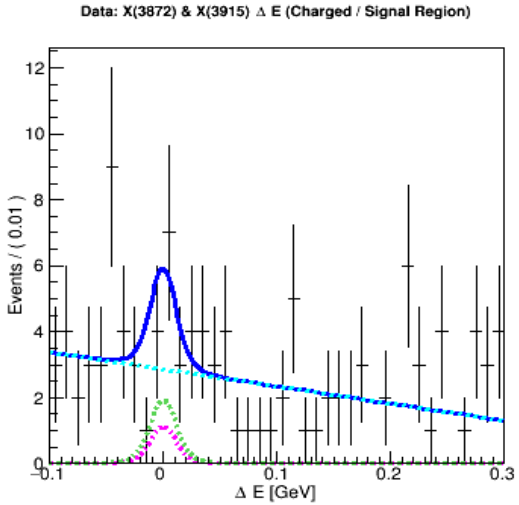


Box Opened

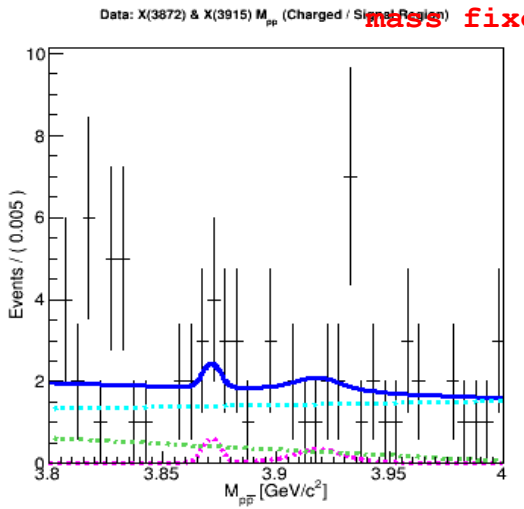
20170601

$$B^+ \to X(3872), X(3915) K^+ \to p\bar{p}K^+$$

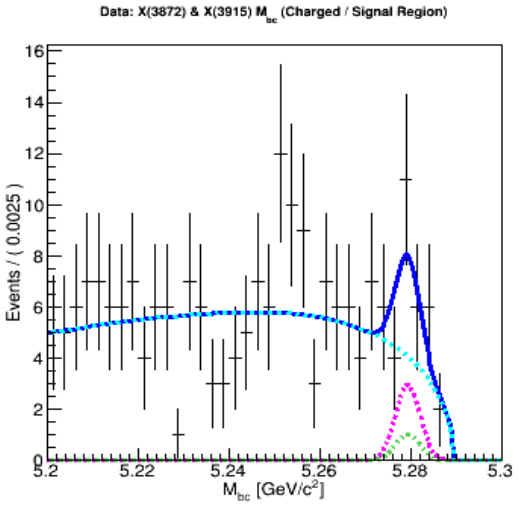


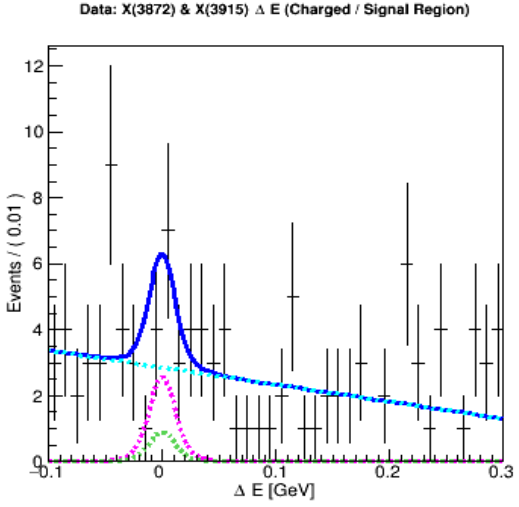


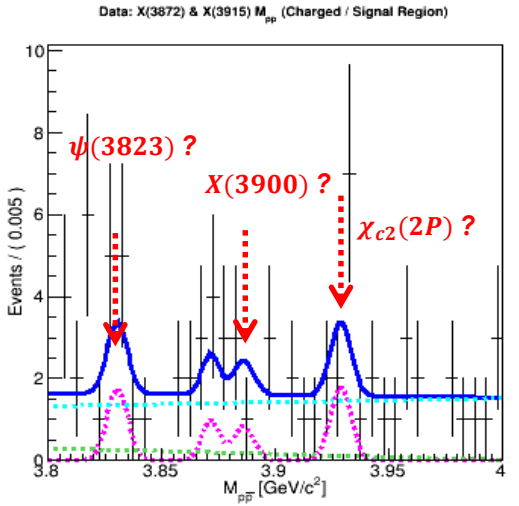
mass fixed



mass floated



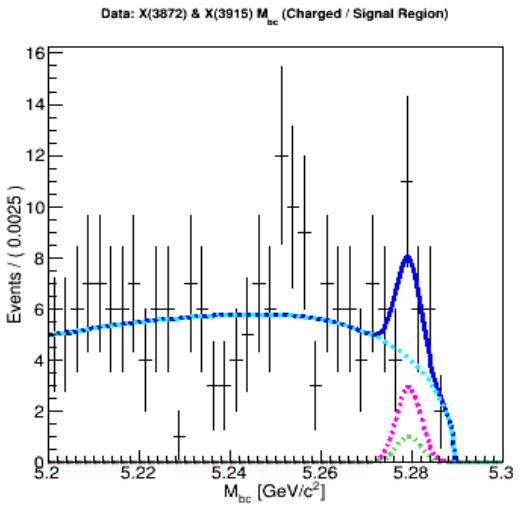


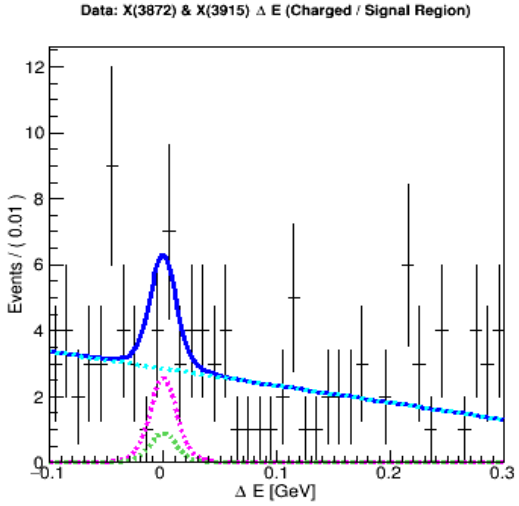


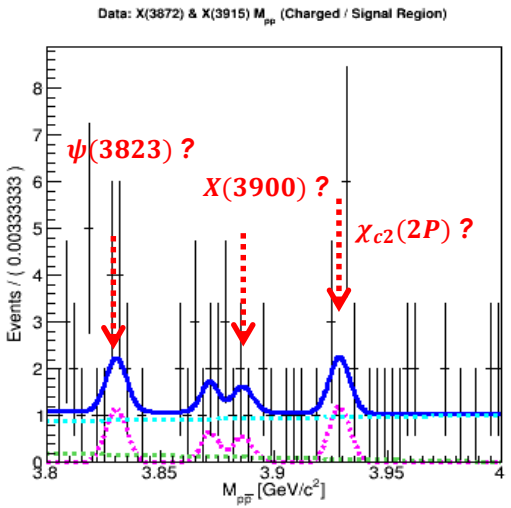
$$B^+ \to X(3872), X(3915) K^+ \to p\bar{p}K^+$$

B^+ Decay	PDG 2016		measured	
	mass (GeV/c²)	width (GeV/c²)	mass (GeV/c²)	width (GeV/c²)
$\Psi(3823)$	3.8222 ± 0.0012	< 0.016	3.8304 ± 0.0026	0.0046 (fixed)
$X(3872)$	3.8717 ± 0.0002	< 0.0012	fixed	fixed
$X(3900)$	3.8866 ± 0.0024	0.028	3.8860 ± 0.0067	0.0046 (fixed)
$X(3915)$	3.9184 ± 0.0019	0.020	fixed	fixed
$\chi_{c2}(2P)$	3.9272 ± 0.0026	0.024	3.9287 ± 0.0025	0.0046 (fixed)

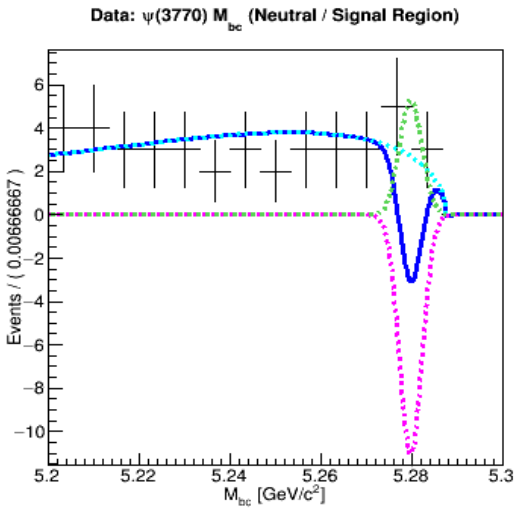
mass floated

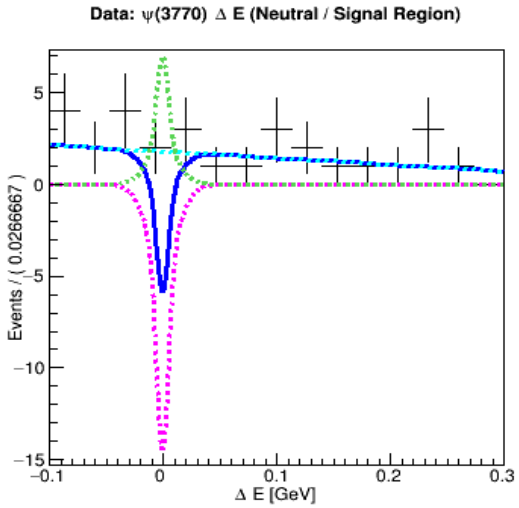


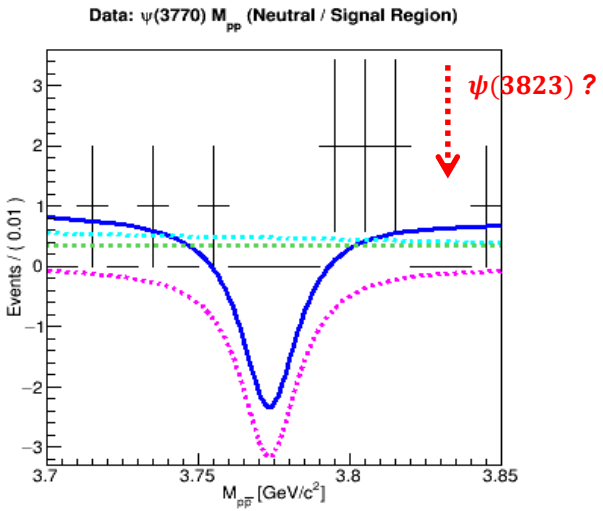




$$B^0 \to \psi(3770) K_S^0 \to p\bar{p}K_S^0$$







Preliminary Results

statistical error only

B^+ Decay	Yield	UL (90% CL)	Eff [%]	Significance (σ)	BF ($\times 10^{-6}$)	UL (90% CL)	PDG 2016 ($\times 10^{-6}$)
$\eta_c(1S)$	327 ± 32	-	30.28	13.47	1.40 ± 0.14		1.44 ± 0.23
J/ψ	535 ± 25	-	31.55	35.26	2.20 ± 0.10		2.18 ± 0.07
$\chi_{c0}(1P)$	15 ± 6	-	19.94	3.21	0.097 ± 0.038		0.0338 ± 0.0036
$\eta_c(2S)$	8.27 ± 5.31	< 17	20.14	1.81	0.0518 ± 0.0333	< 0.106	< 0.106 (95% CL)
$\Psi(2S)$	27.05 ± 6.15	-	20.63	6.65	0.165 ± 0.038		0.180 ± 0.009
$\Psi(3770)$	2.20 ± 5.70	< 11	19.54	1.43	0.0146 ± 0.0378	< 0.073	-
$X(3872)$	1.24 ± 2.35	< 7	20.47	0.59	0.00765 ± 0.0145	< 0.043	< 0.017 (95% CL)
$X(3915)$	2.51 ± 4.06	< 10	19.94	0.64	0.0159 ± 0.0257	< 0.063	< 0.071 (95% CL)

B^0 Decay	Yield	UL (90% CL)	Eff [%]	Significance (σ)	BF ($\times 10^{-6}$)	UL (90% CL)	PDG 2016 ($\times 10^{-6}$)
$\eta_c(1S)$	90 ± 11	-	21.18	8.98	0.551 ± 0.069		0.60 ± 0.11
J/ψ	150 ± 13	-	21.90	20.15	0.888 ± 0.076		0.93 ± 0.04
$\chi_{c0}(1P)$							0.0165 ± 0.0031
$\eta_c(2S)$	1.61 ± 0.56	< 6	13.37	0.91	0.016 ± 0.006	< 0.060	-
$\Psi(2S)$	14.17 ± 2.73	-	13.25	6.61	0.143 ± 0.027		0.0835 ± 0.00766
$\Psi(3770)$							-
$X(3872)$							-
$X(3915)$							-

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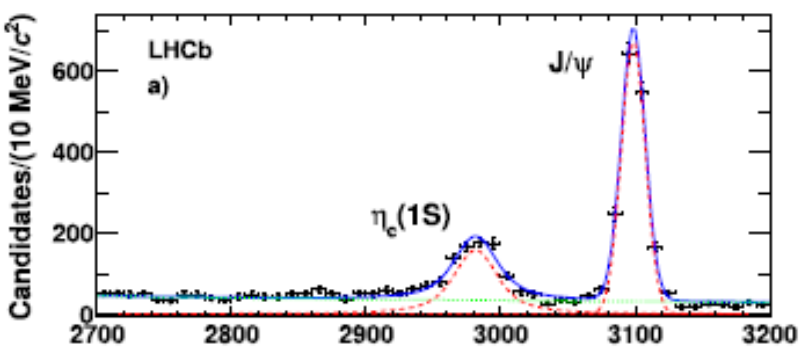
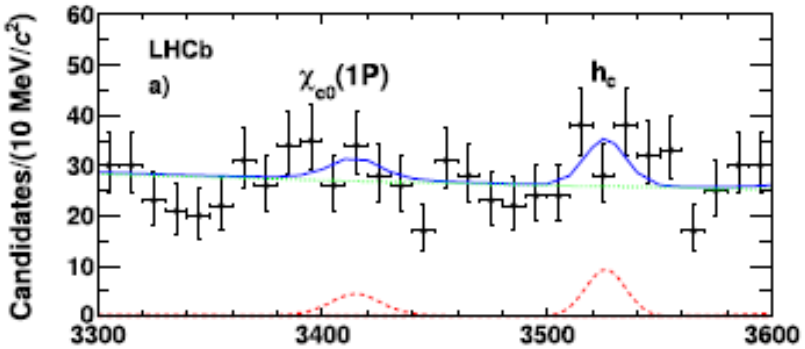
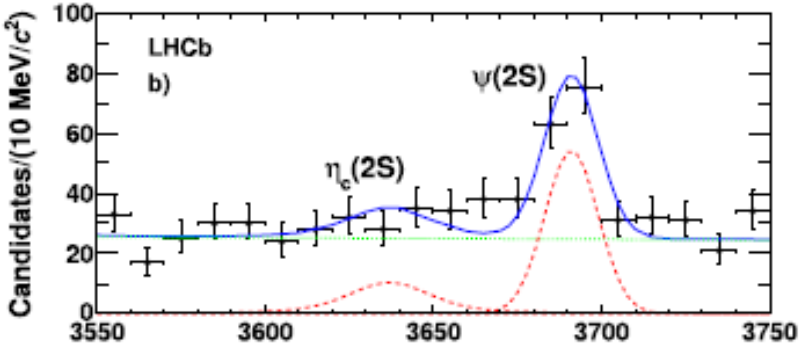
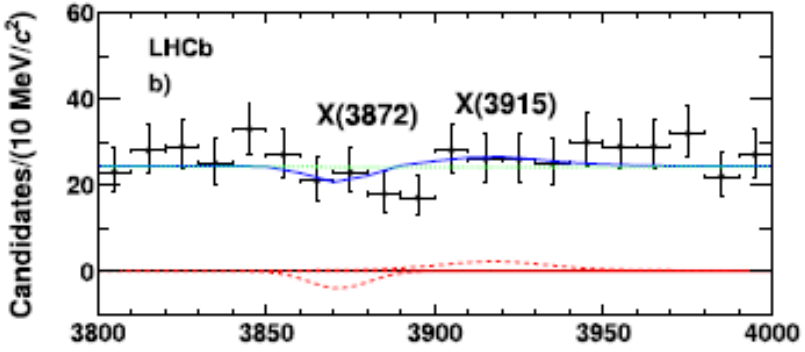
Comparison with LHCb results









B^+ Decay	BF (x10^{-6})	UL (90% CL)	BF (x10^{-6})	UL (95% CL)
$\eta_c(1S)$	1.40 ± 0.14		1.27 ± 0.08	
$\chi_{c0}(1P)$	0.097 ± 0.038		0.024 ± 0.021	< 0.062
$\eta_c(2S)$	0.052 ± 0.033	< 0.106	0.063 ± 0.025	< 0.106
$\Psi(2S)$	0.165 ± 0.038		0.175 ± 0.027	
$X(3872)$	0.008 ± 0.015	< 0.043	-0.015 ± 0.013	< 0.017
$X(3915)$	0.016 ± 0.026	< 0.063	0.022 ± 0.029	< 0.071

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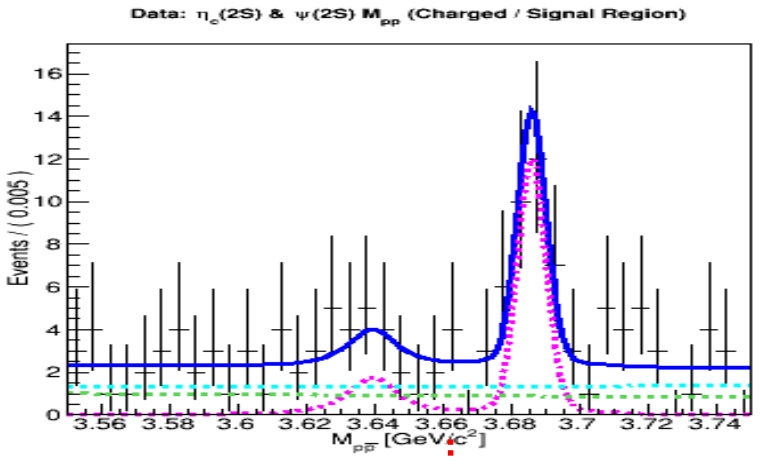
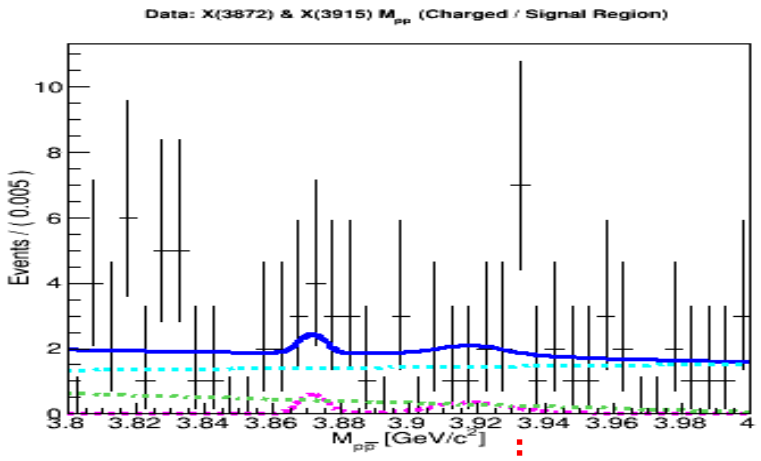
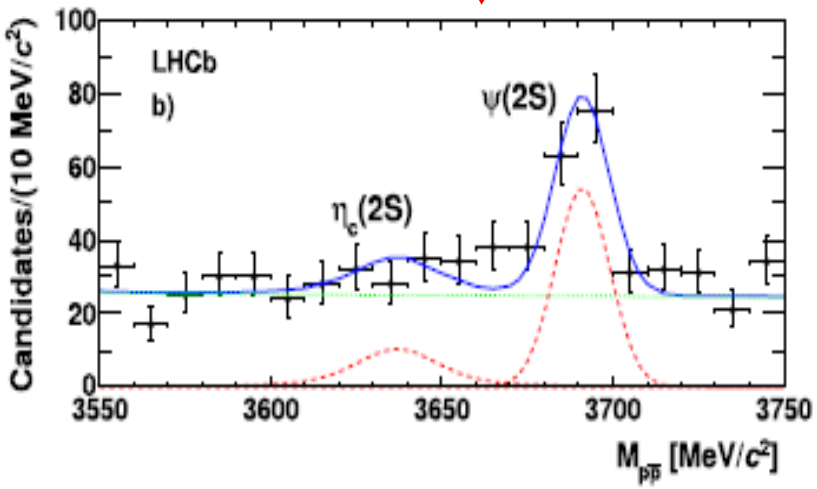
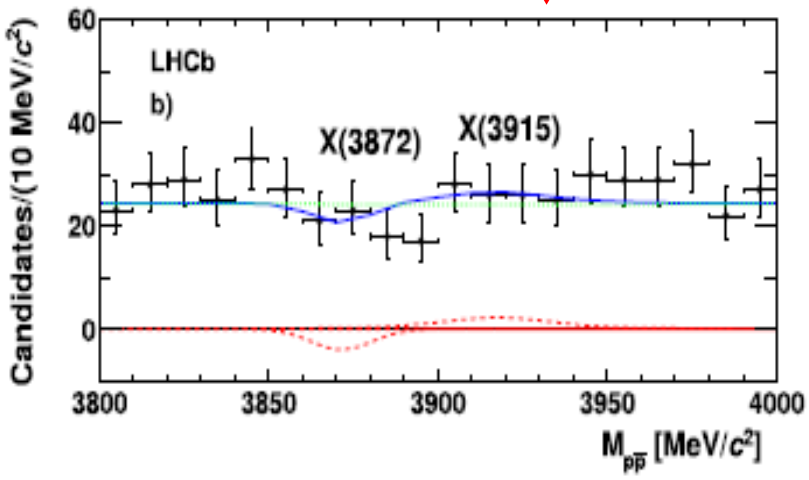
Comparison with LHCb results









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