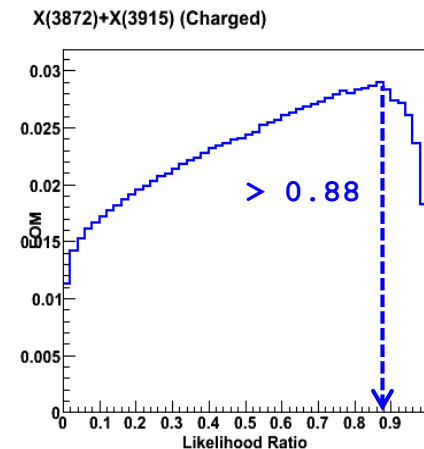
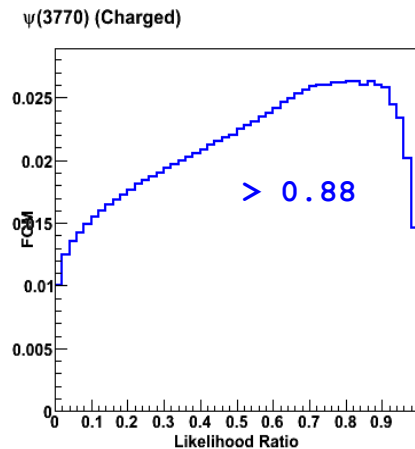
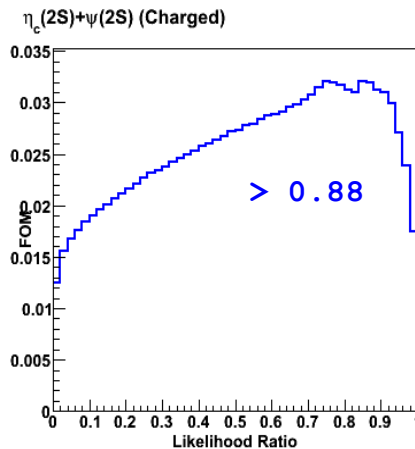
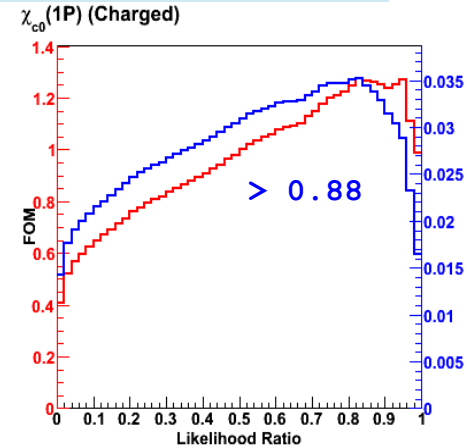
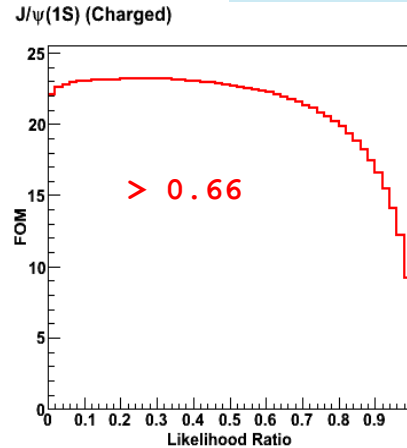
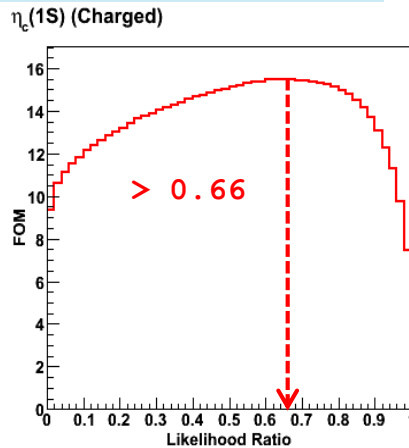


Optimization of LR Cut: FOM $B^+ \rightarrow (cc\bar{b})K^+ \rightarrow pp\bar{b}K^+$

$$FOM(t) = \frac{S(t)}{\sqrt{S(t) + B(t)}}$$

$$FOM(t) = \frac{\varepsilon(t)}{\frac{a}{2} + \sqrt{B(t)}}$$

Standard FOM
Punzi FOM

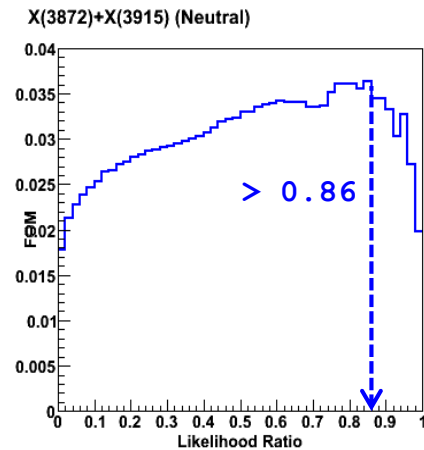
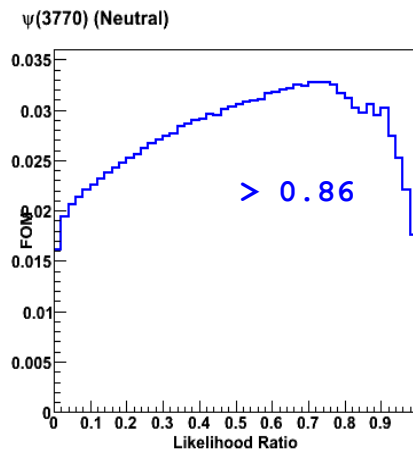
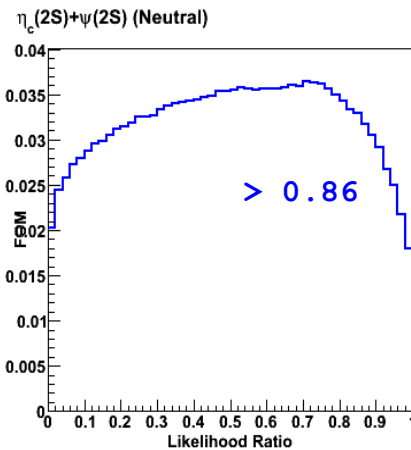
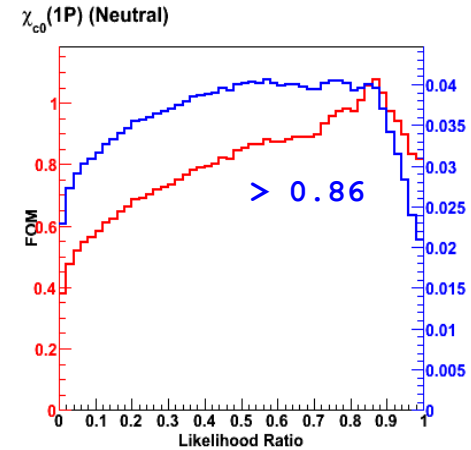
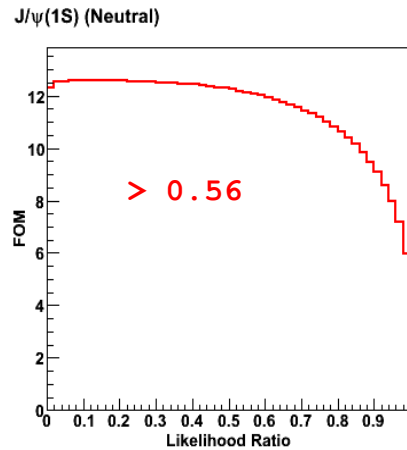
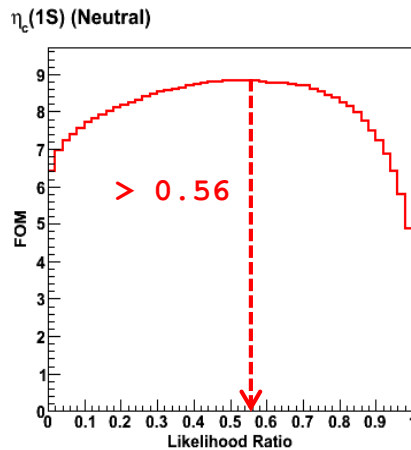


Optimization of LR Cut: FOM

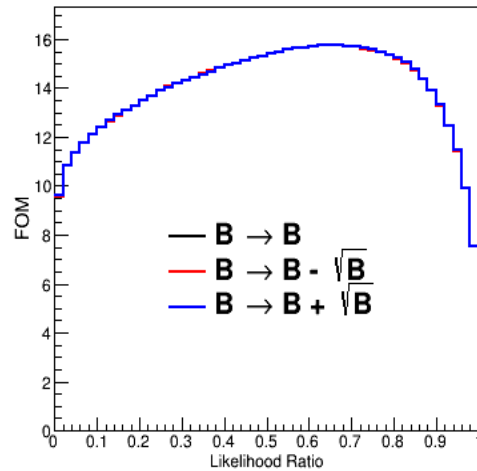
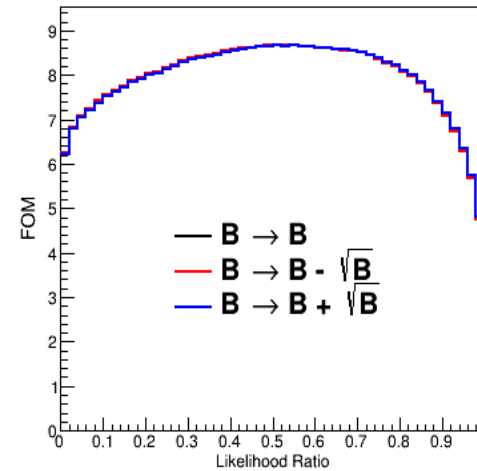
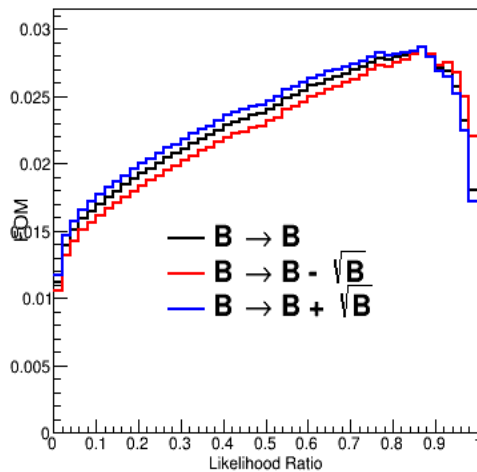
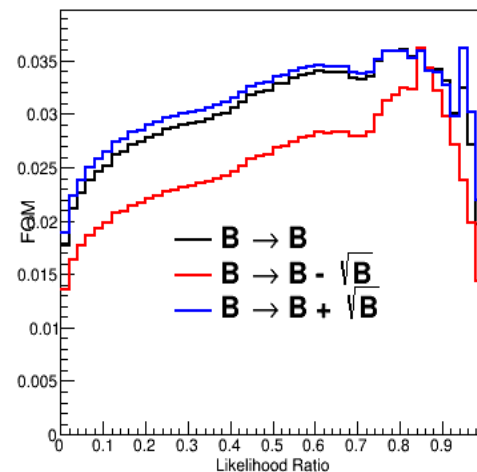
- $B^0 \rightarrow (cc\bar{b})K_s^0 \rightarrow pp\bar{b}K_s^0$

Standard FOM

Punzi FOM



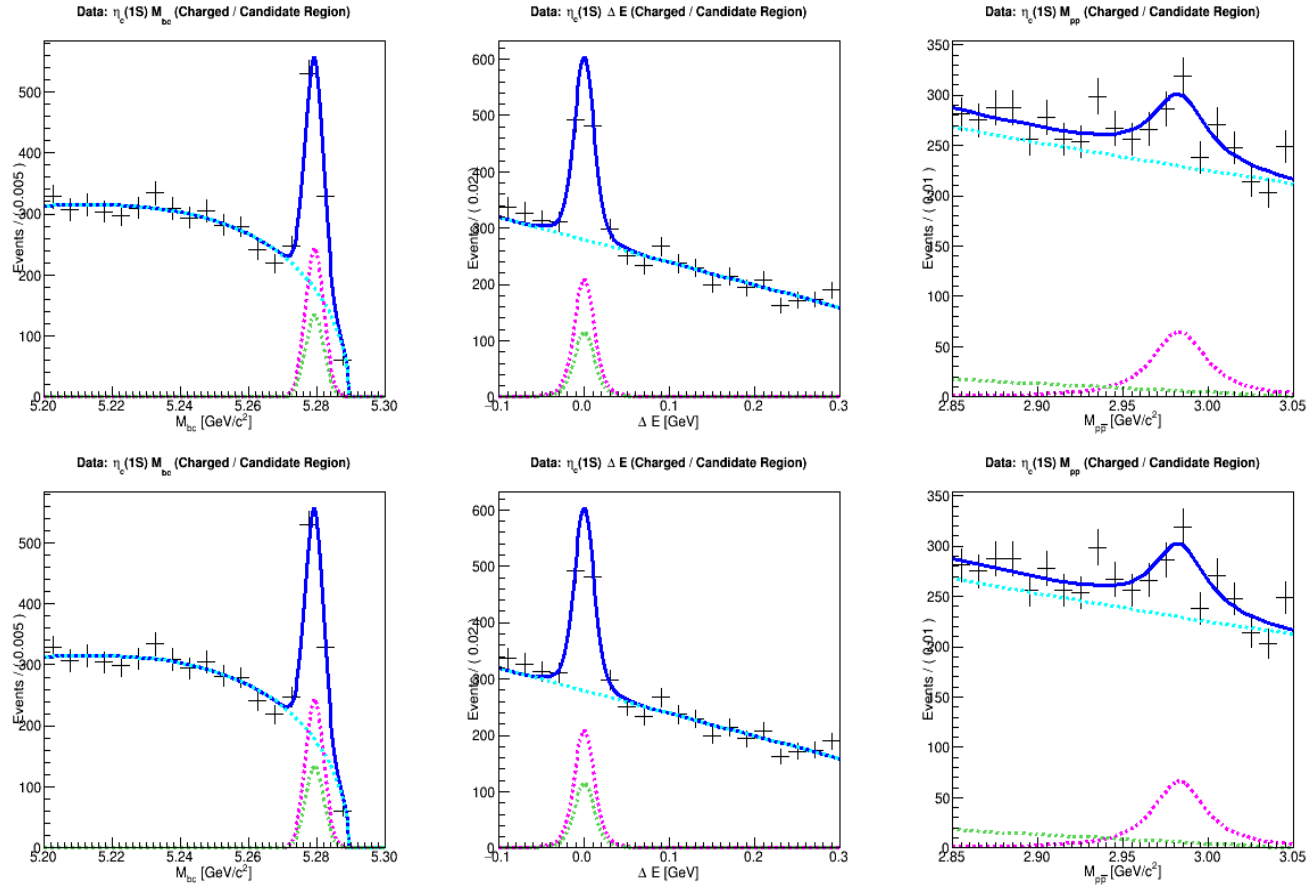
Optimization of LR Cut: FOM

 $\eta_c(1S)$ (Charged) $\eta_c(1S)$ (Neutral) $X(3872)+X(3915)$ (Charged) $X(3872)+X(3915)$ (Neutral)

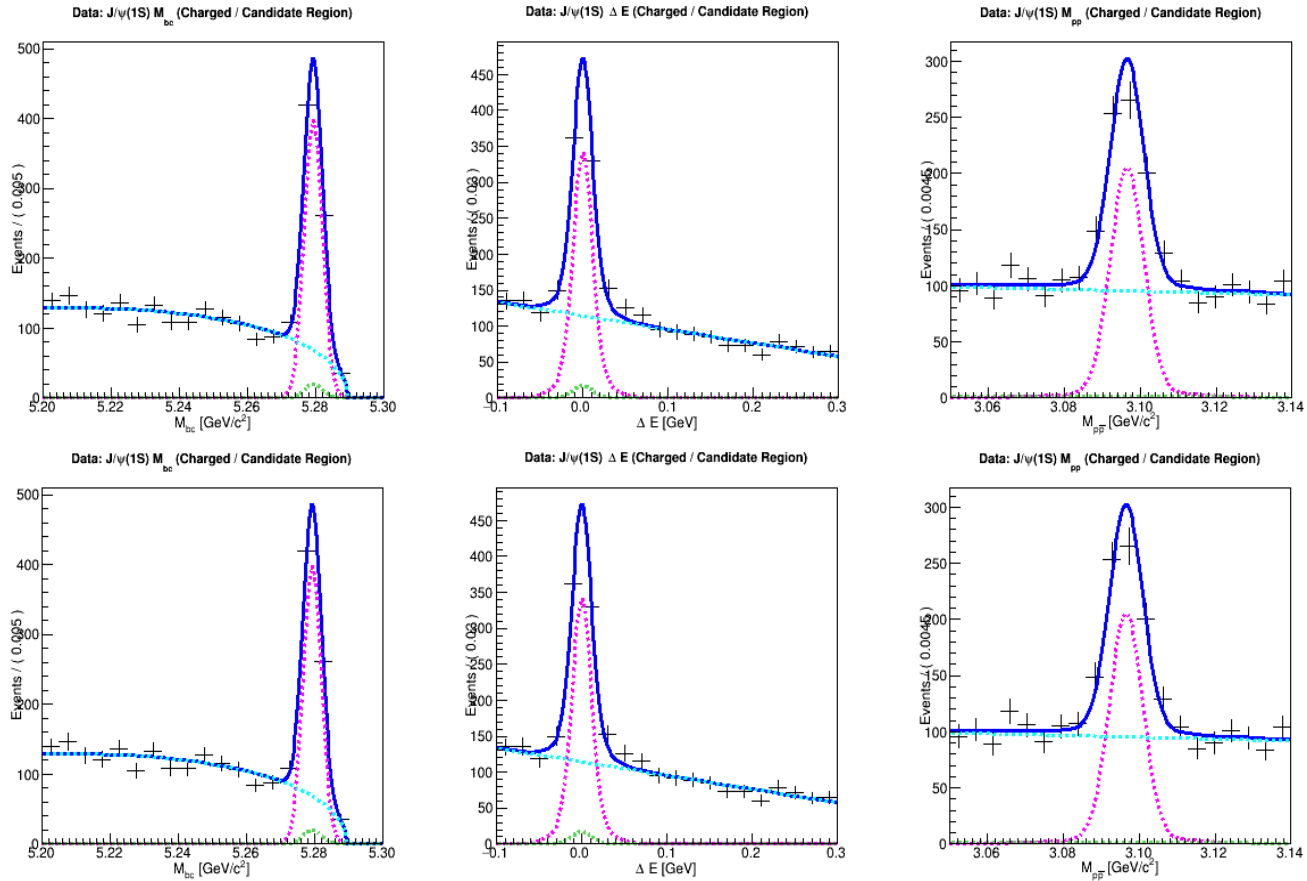
Optimization of LR Cut: FOM

B ⁺ Decay	BF (x10 ⁻⁶)	lrcut - 0.02	lrcut + 0.02	Deviation max [%]
$\eta_c(1S)$	1.399 ± 0.1343	1.407 ± 0.138	1.386 ± 0.140	0.93
J/ ψ	2.197 ± 0.101	2.187 ± 0.100	2.197 ± 0.102	0.46
$\chi_{c0}(1P)$	0.0972 ± 0.0378	0.0931 ± 0.0360	0.0936 ± 0.0393	4.28
$\eta_c(2S)$	0.0515 ± 0.0331	0.0455 ± 0.0315	0.0334 ± 0.0327	35.27
$\Psi(2S)$	0.165 ± 0.037	0.191 ± 0.038	0.161 ± 0.0383	15.87
$\Psi(3770)$	0.0107 ± 0.0376	-0.0021 ± 0.0342	0.0050 ± 0.0387	119.48
X(3872)	0.00242 ± 0.01152	0.00468 ± 0.01349	0.00055 ± 0.01822	93.53
X(3915)	0.0146 ± 0.0255	0.0233 ± 0.0266	0.0216 ± 0.0289	59.14

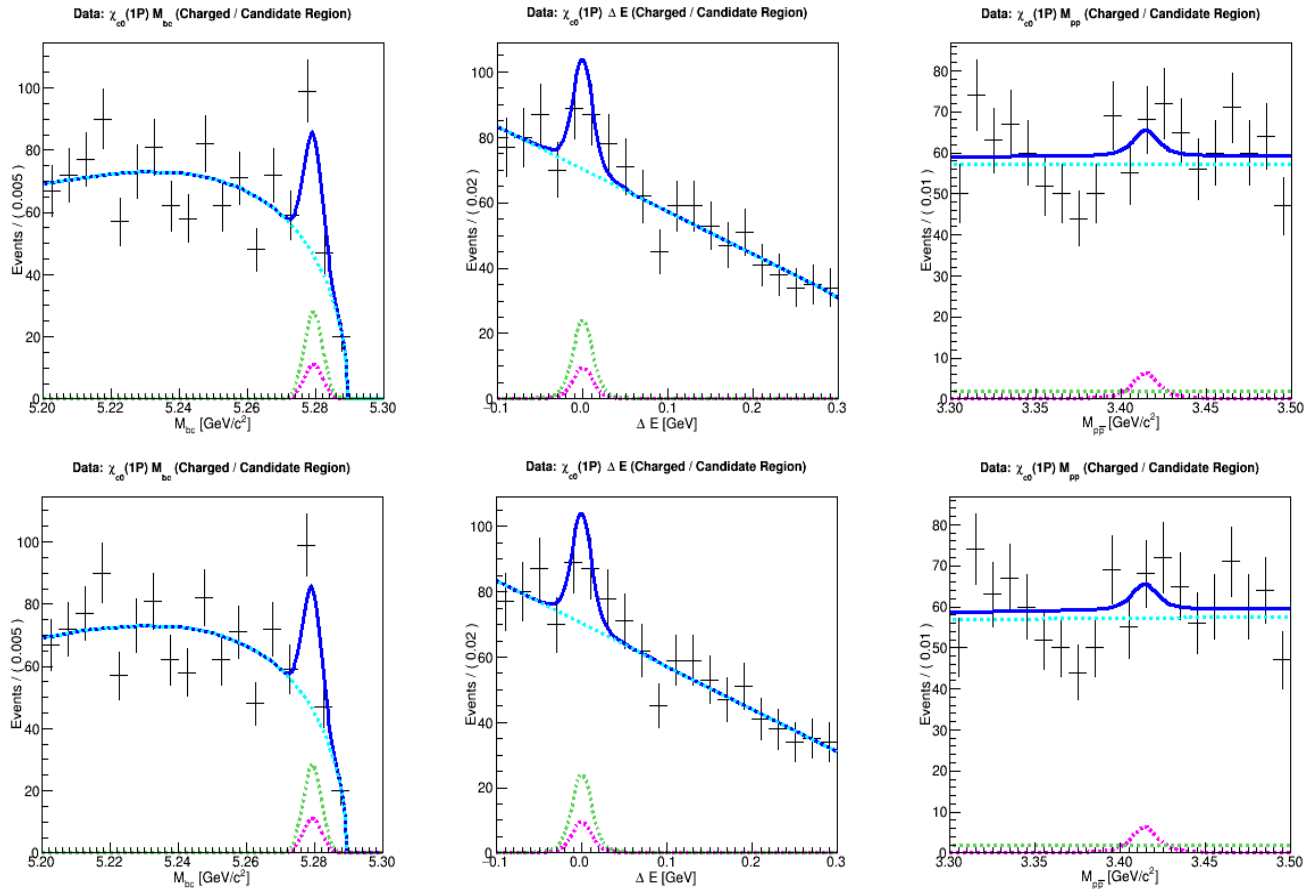
$$B^+ \rightarrow \eta_c(1S)K^+ \rightarrow pp\bar{K}^+$$



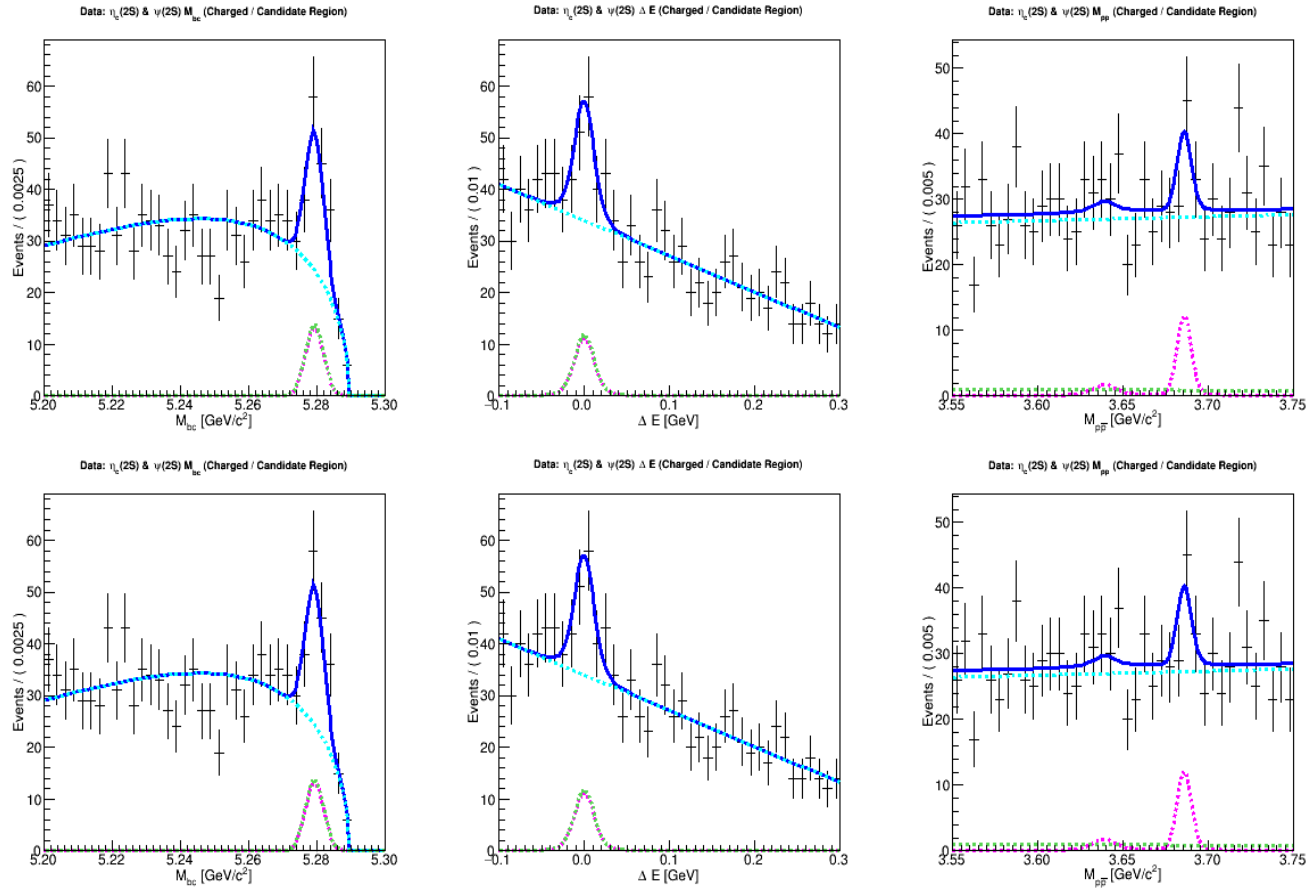
$$B^+ \rightarrow J/\psi(1S)K^+ \rightarrow p\bar{p}K^+$$



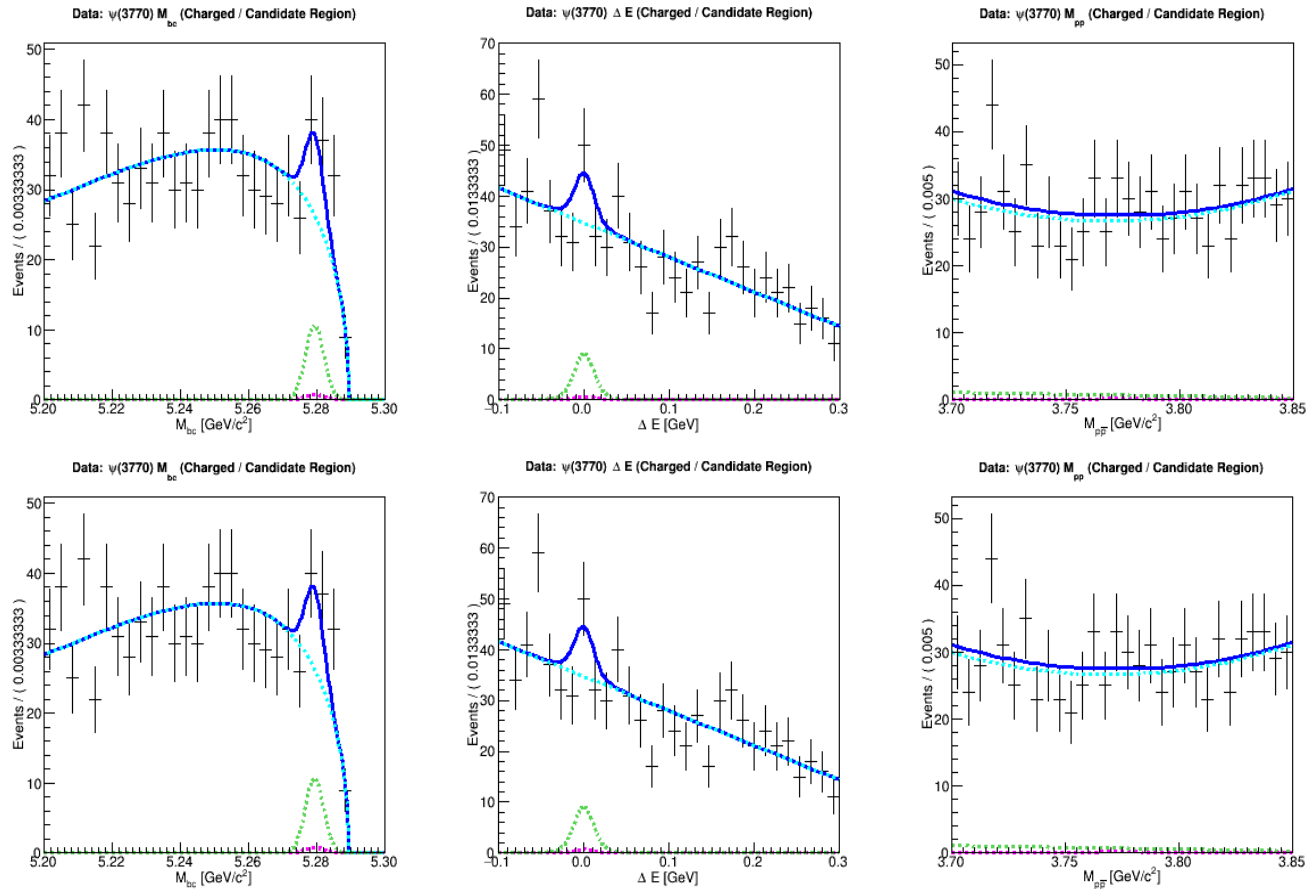
$$B^+ \rightarrow \chi_{c0}(1P)K^+ \rightarrow p\bar{p}K^+$$



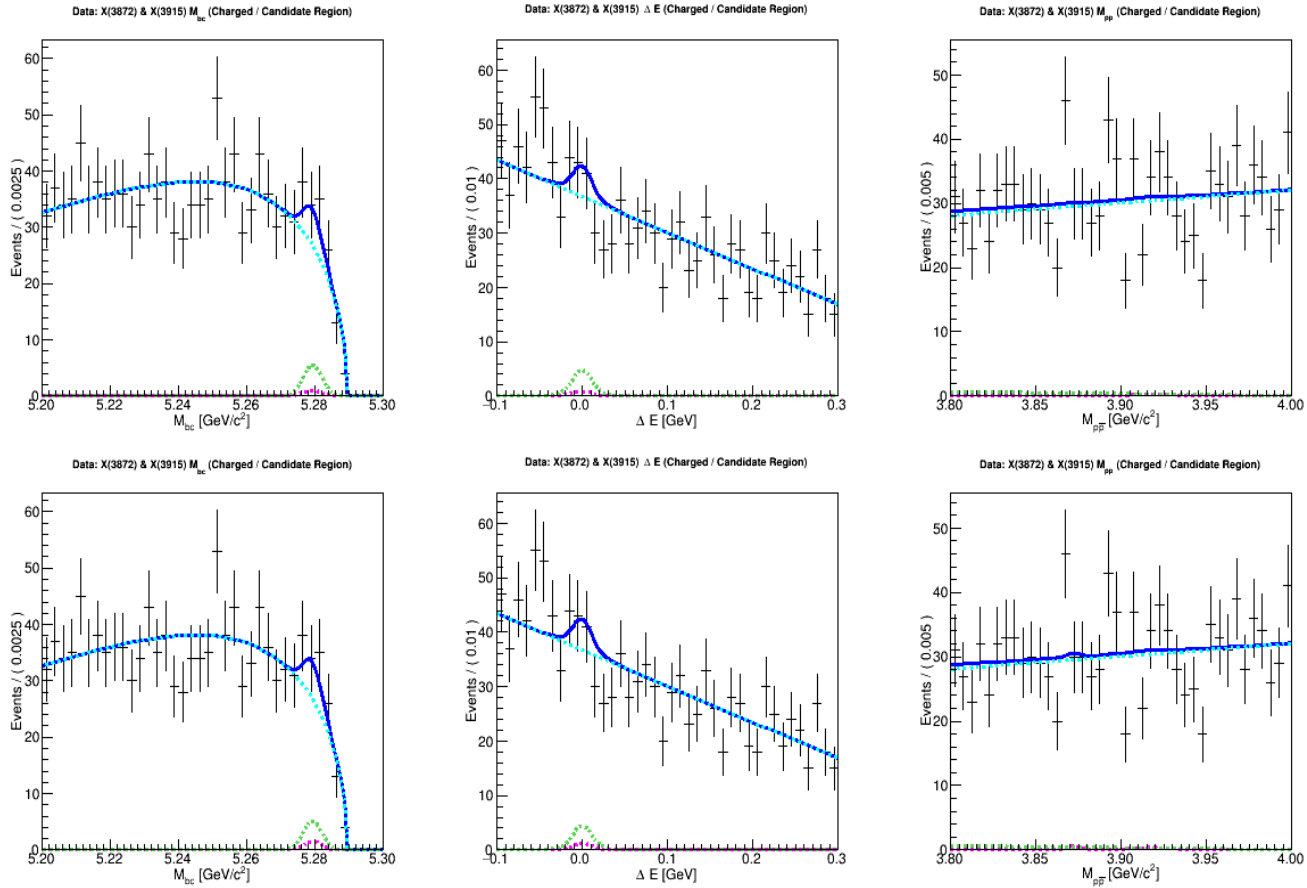
$$B^+ \rightarrow \eta_c(2S), \psi(2S) K^+ \rightarrow p \bar{p} K^+$$



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



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



Fixed Parameters Systematic Error

B ⁺ Decay	Parameter Fixed		Parameter Floated		BF Relative Error [%]
	Fitted Yield	BF (x10 ⁻⁶)	Fitted Yield	BF (x10 ⁻⁶)	
$\eta_c(1S)$	326.941 ± 31.3827	1.39948 ± 0.134335	327.279 ± 23.8114	1.40095 ± 0.101928	0.11
J/ψ	534.863 ± 24.5498	2.1969 ± 0.100836	534.135 ± 24.6272	2.19389 ± 0.101153	0.14
$\chi_{c0}(1P)^*$	14.9623 ± 5.82081	0.097244 ± 0.0378309	15.0279 ± 5.83239	0.0976698 ± 0.0379062	0.44
$\eta_c(2S)$	8.23344 ± 5.29309	0.0515478 ± 0.031389	8.20844 ± 5.26743	0.0513977 ± 0.0329824	0.29
$\Psi(2S)$	27.0127 ± 6.13391	0.165078 ± 0.0374851	27.1194 ± 6.12625	0.165731 ± 0.0374386	0.40
$\Psi(3770)^*$	1.61453 ± 5.67253	0.0107097 ± 0.0376278	1.64997 ± 5.62699	0.0109448 ± 0.0373258	2.20
$X(3872)^*$	0.39286 ± 1.87022	0.00242 ± 0.0115206	1.26584 ± 2.37074	0.00779742 ± 0.0146035	222.20
$X(3915)^*$	2.31615 ± 4.03067	0.0146461 ± 0.0254878	2.59857 ± 4.13247	0.0164312 ± 0.0261303	12.19