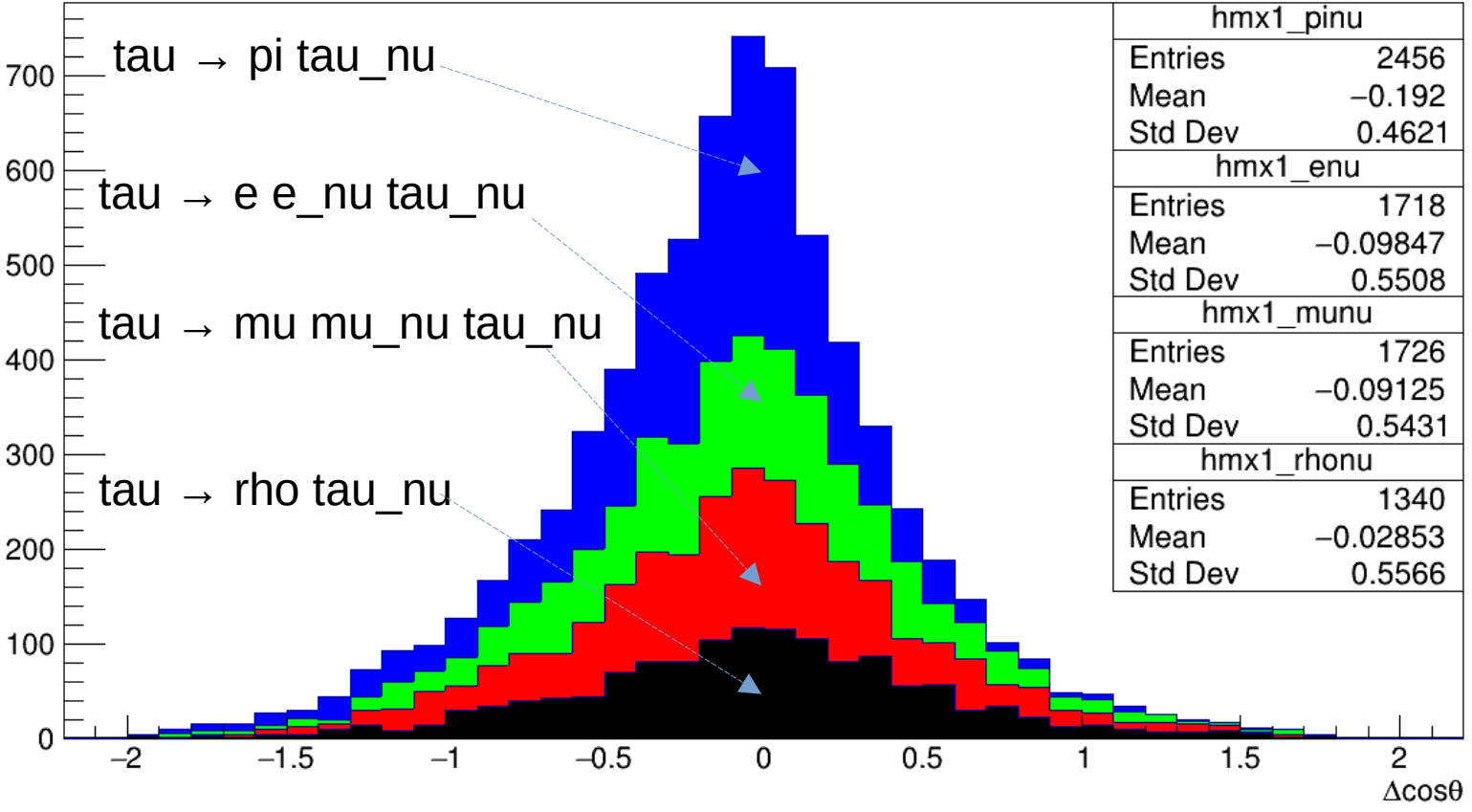
Update

Addressing comments from the previous meeting

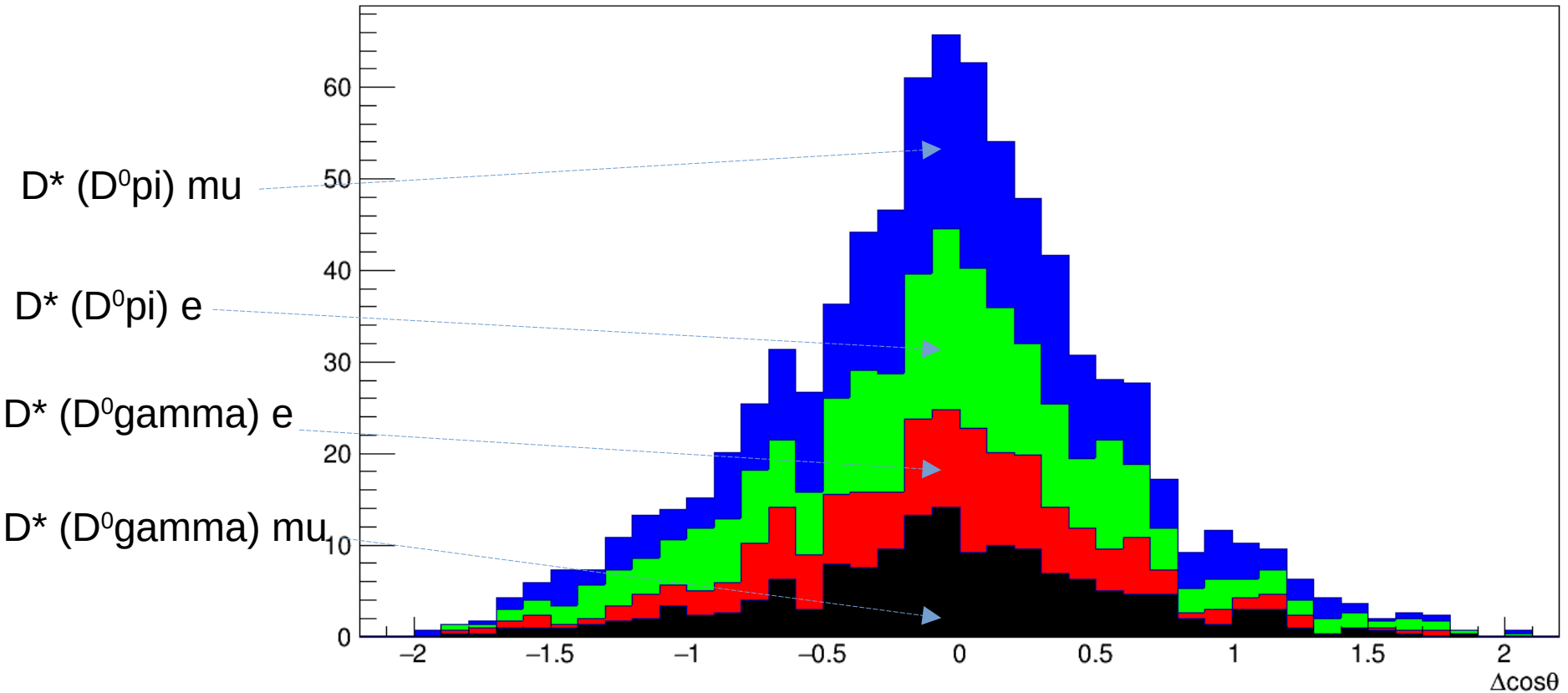
-Full Belle dataset
-01 Stream of generic MC

04/11/2024

Decay modes of tau



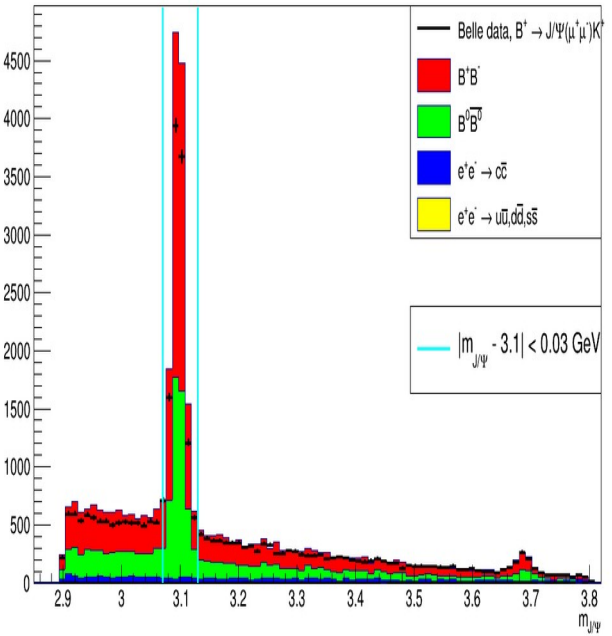
Decay modes of B^+B^-



$B^+ \rightarrow J/\psi(\mu^+\mu^-)\ K^+$

Before any selection

N_{sig}	N_{B+B-}	$N_{B0\overline{B0}}$	$N_{c\bar{c}}$	N_{uds}	Data/MC
31917	20991	12699	2400	394	0.94



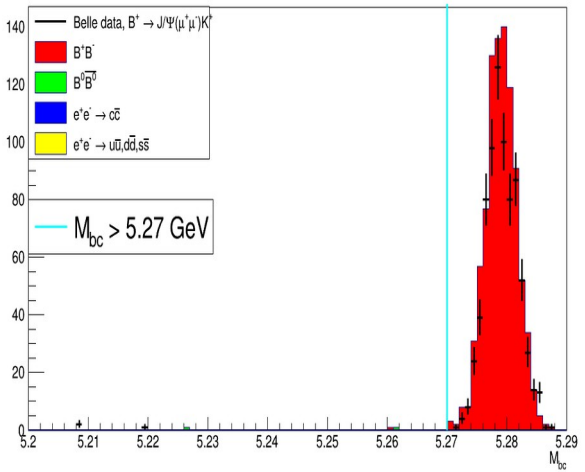
After selecting $\mathbf{|m_{J/\psi} - 3.1| < 0.03\ GeV}$

N_{sig}	N_{B+B-}	$N_{B0\overline{B0}}$	$N_{c\bar{c}}$	N_{uds}	Data/MC
11433	8440	4995	224	25	0.92

$B^+ \rightarrow J/\psi(\mu^+\mu^-)\ K^+$

After selecting $|m_{J/\psi} - 3.1| < 0.03$ GeV

N_{sig}	N_{B+B-}	$N_{B0\overline{B0}}$	$N_{c\bar{c}}$	N_{uds}	Data/MC
11433	8440	4995	224	25	0.92



After selecting $M_{bc} > 5.27$ GeV

N_{sig}	N_{B+B-}	$N_{B0\overline{B0}}$	$N_{c\bar{c}}$	N_{uds}	Data/MC
2098	2034	622	6.0	1.0	0.84

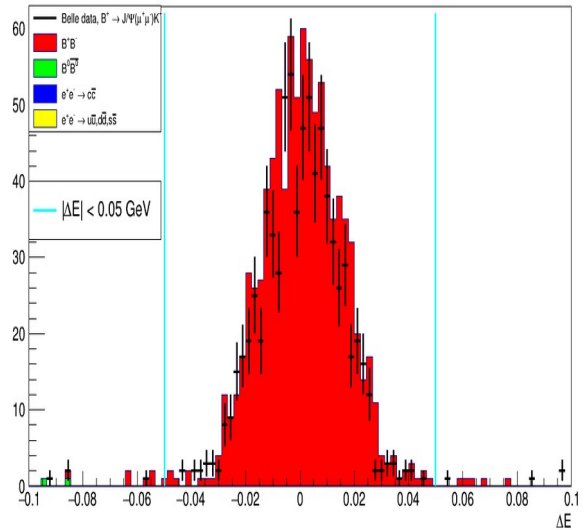
$B^+ \rightarrow J/\psi(\mu^+\mu^-)\ K^+$

After selecting **M_{bc} > 5.27 GeV**

N_{sig}	N_{B+B-}	$N_{B0\overline{B0}}$	$N_{c\bar{c}}$	N_{uds}	Data/MC
2098	2034	622	6.0	1.0	0.84

After selecting **|ΔE| < 0.05 GeV**

N_{sig}	N_{B+B-}	$N_{B0\overline{B0}}$	$N_{c\bar{c}}$	N_{uds}	Data/MC
755	910	0	0	0	0.83



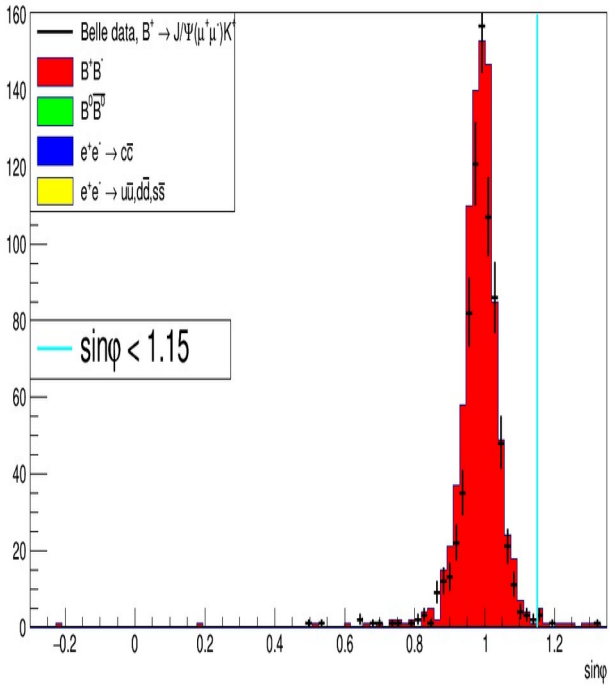
$B^+ \rightarrow J/\psi(\mu^+\mu^-)\ K^+$

After selecting **|ΔE| < 0.05 GeV**

N_{sig}	N_{B+B-}	$N_{B0\overline{B0}}$	$N_{c\bar{c}}$	N_{uds}	Data/MC
755	910	0	0	0	0.83

After selecting **Sinφ < 1.15**

N_{sig}	N_{B+B-}	$N_{B0\overline{B0}}$	$N_{c\bar{c}}$	N_{uds}	Data/MC
748	894	0	0	0	0.83



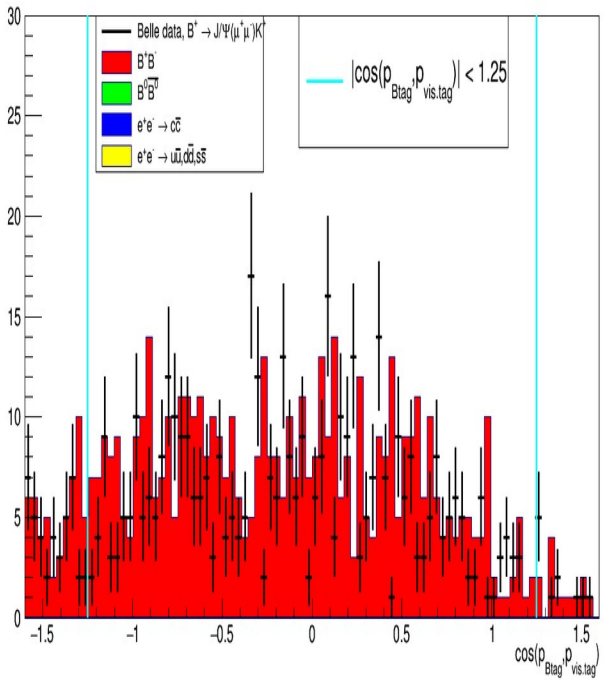
$B^+ \rightarrow J/\psi(\mu^+\mu^-)\ K^+$

After selecting **Sinφ < 1.15**

N_{sig}	N_{B+B-}	$N_{B0\overline{B0}}$	$N_{c\bar{c}}$	N_{uds}	Data/MC
748	894	0	0	0	0.83

After selecting **$|\cos(p_{Btag},p_{vis.tag})| < 1.25$**

N_{sig}	N_{B+B-}	$N_{B0\overline{B0}}$	$N_{c\bar{c}}$	N_{uds}	Data/MC
425	514	0	0	0	0.80



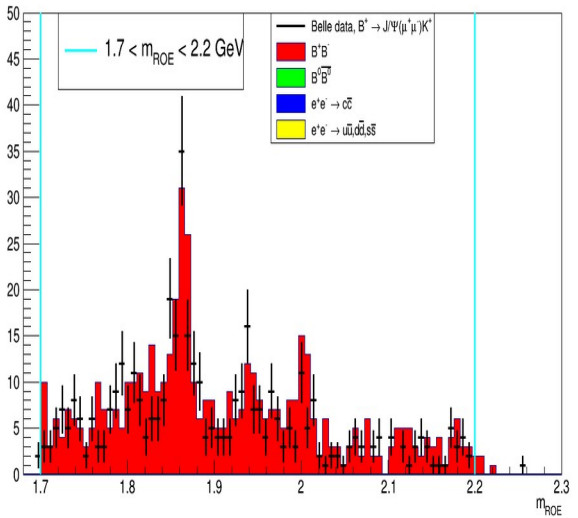
$B^+ \rightarrow J/\psi(\mu^+\mu^-)\ K^+$

After selecting $|\cos(p_{Btag}, p_{vis.tag})| < 1.25$

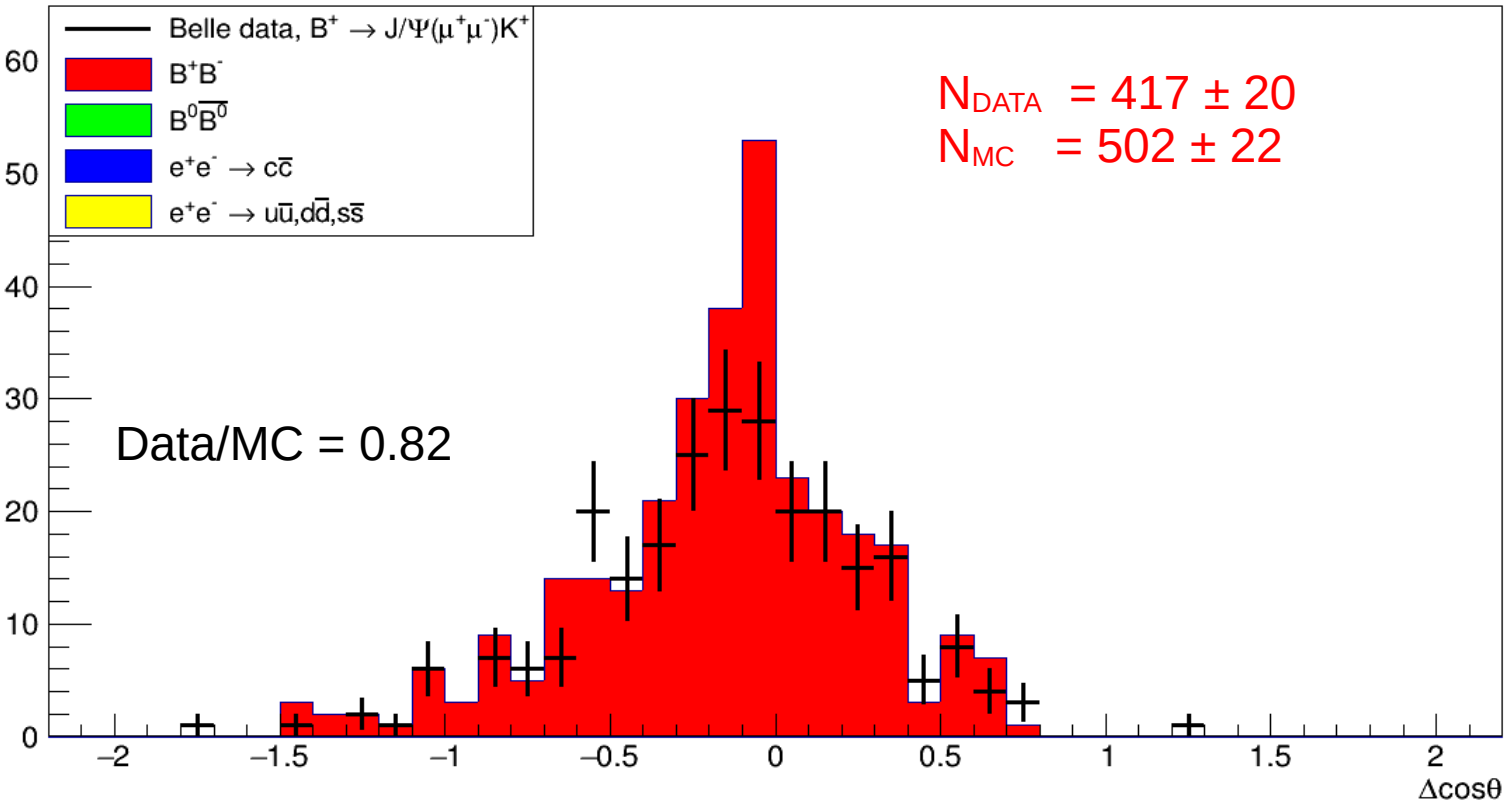
N_{sig}	N_{B+B-}	$N_{B0\overline{B0}}$	$N_{c\bar{c}}$	N_{uds}	Data/MC
425	514	0	0	0	0.80

After selecting $\mathbf{1.7 < m_{ROE} < 2.2\ GeV}$

N_{sig}	N_{B+B-}	$N_{B0\overline{B0}}$	$N_{c\bar{c}}$	N_{uds}	Data/MC
417	502	0	0	0	0.82

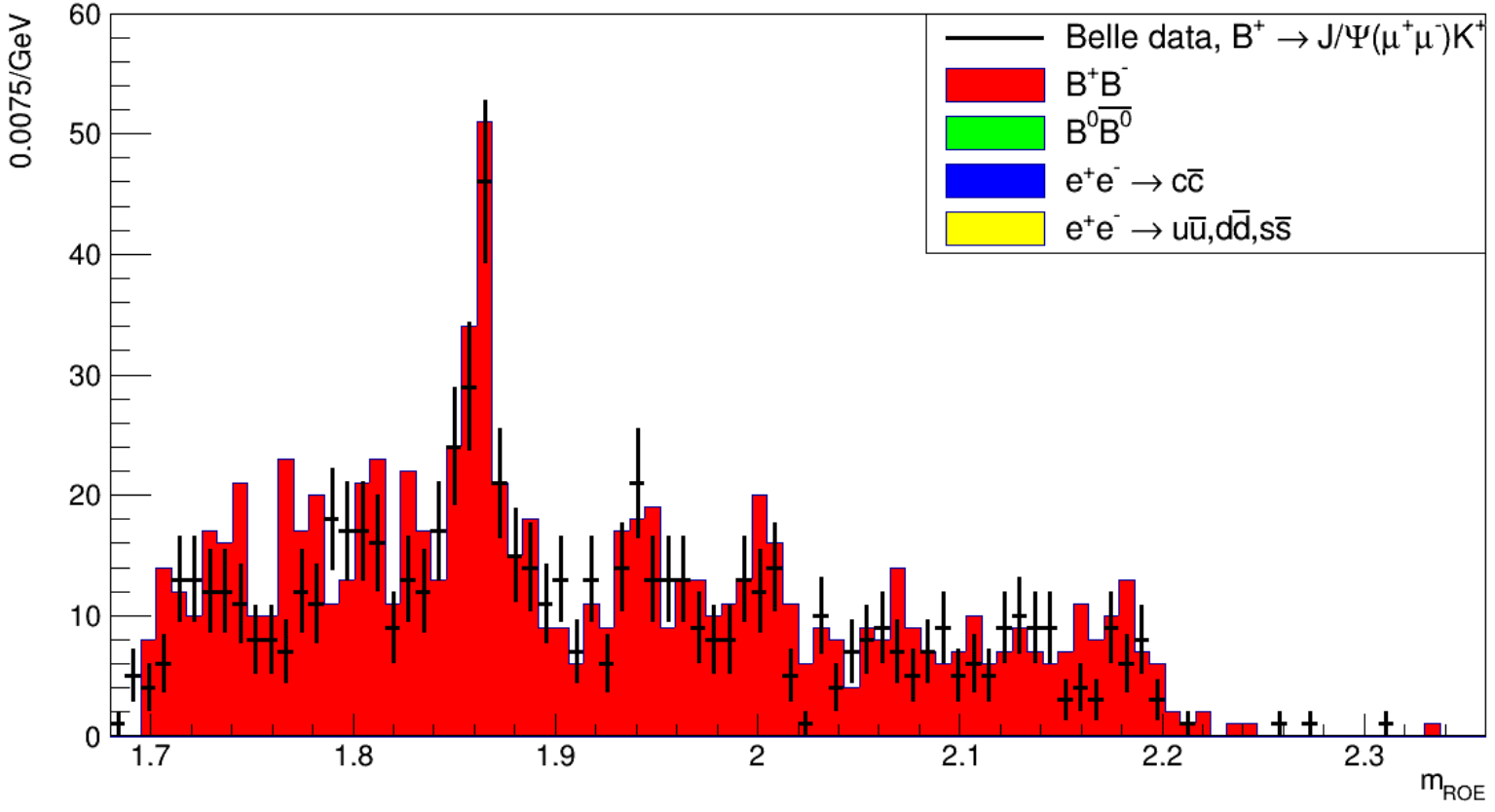


$\Delta\cos\theta$ for $B^+ \rightarrow J/\psi(\mu^+\mu^-)\, K^+$

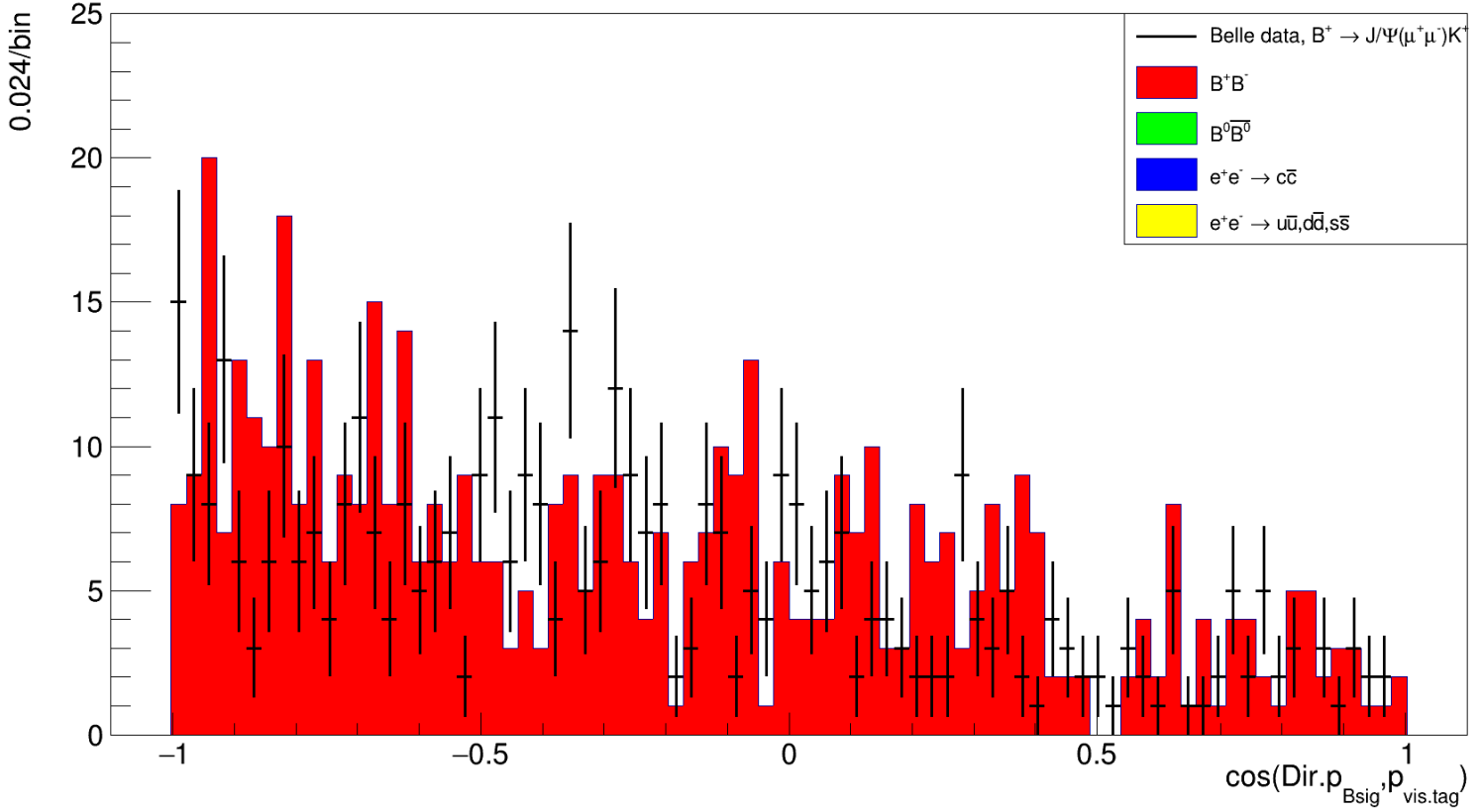


Additional plots for $B^+ \rightarrow J/\psi(\mu^+\mu^-)\ K^+$

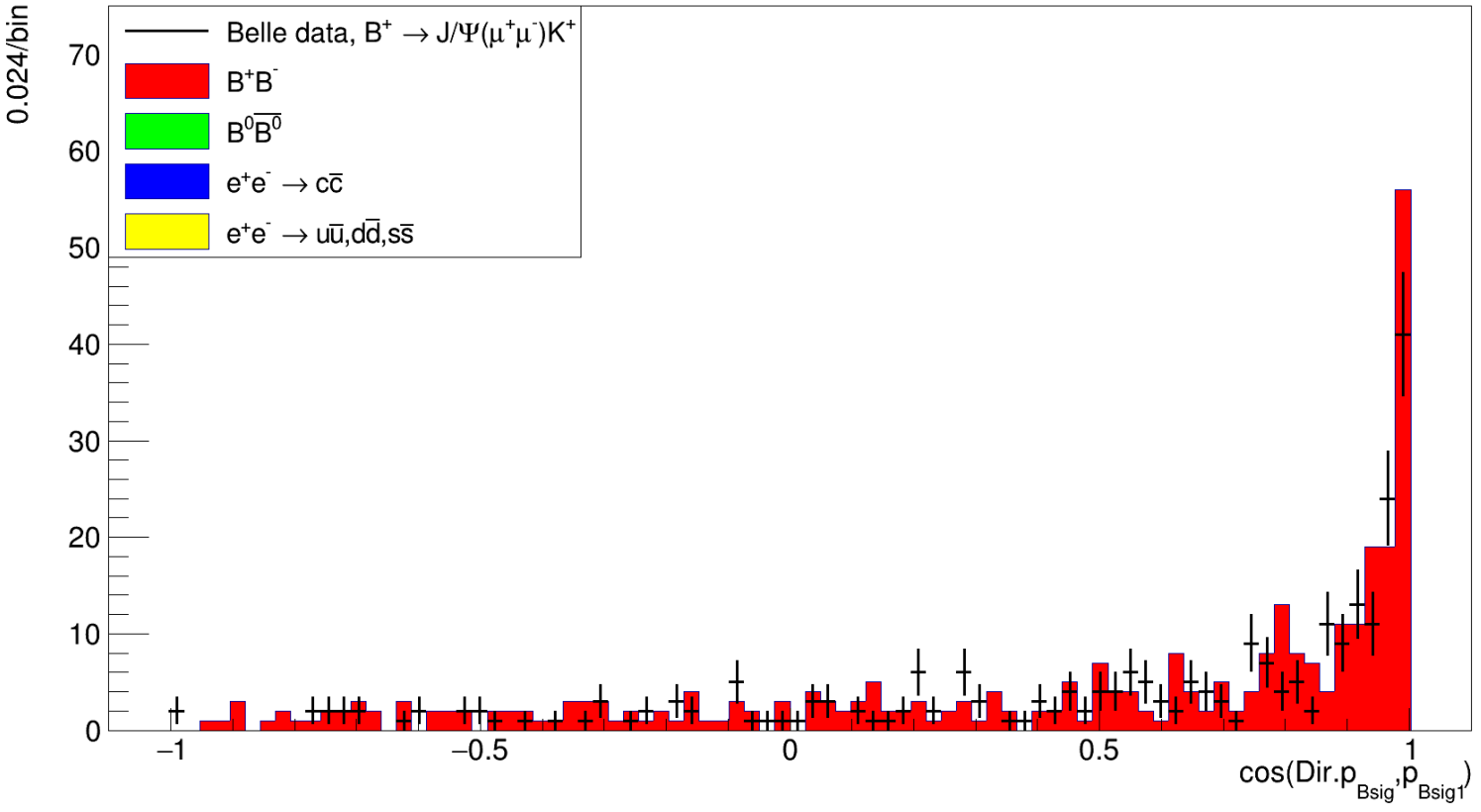
m_{ROE} without **Sinφ** cut



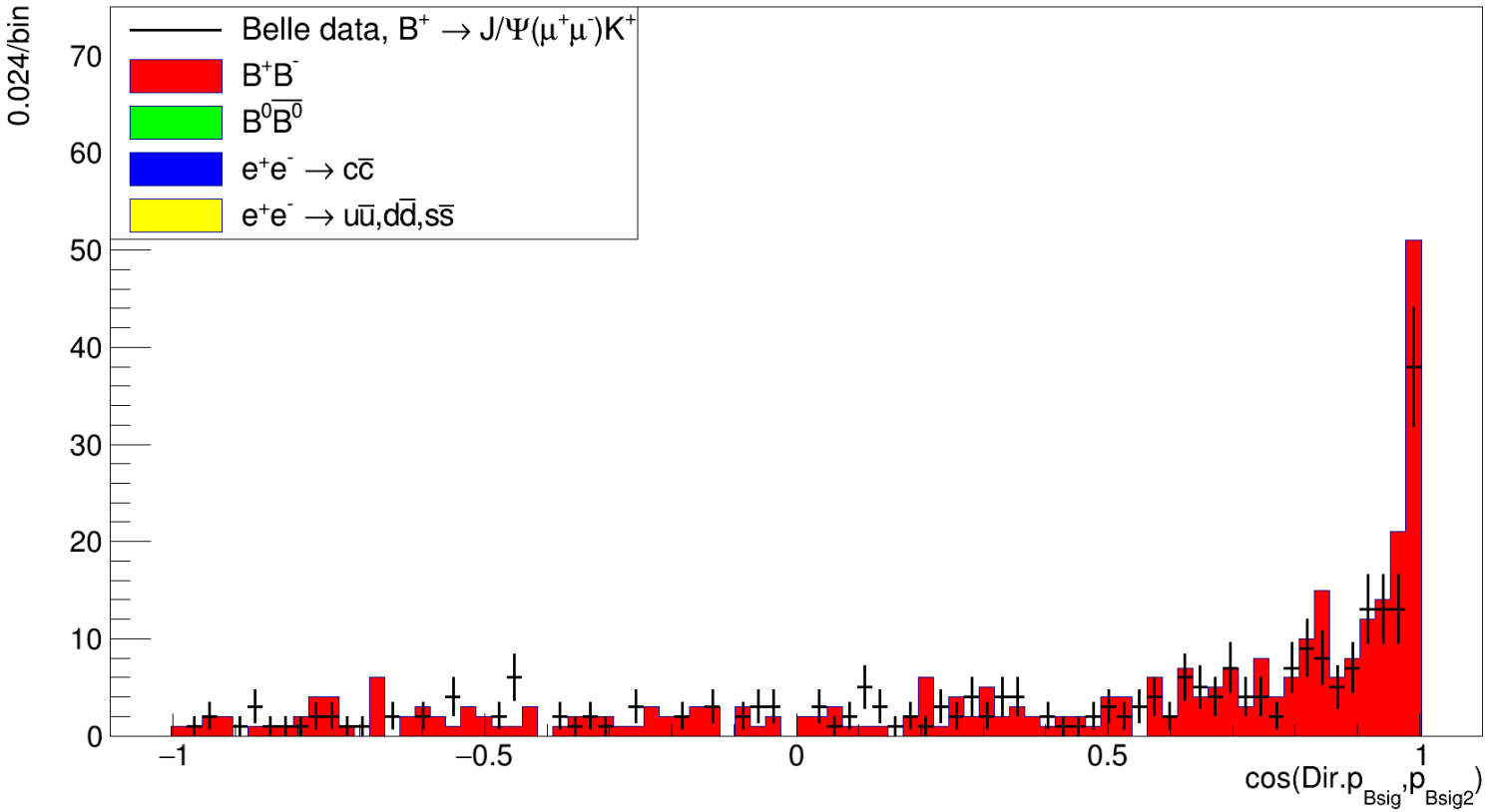
$\cos(p_{Bsig}, p_{vis.tag})$



$\cos(p_{Bsig}, p_{Bsig1})$



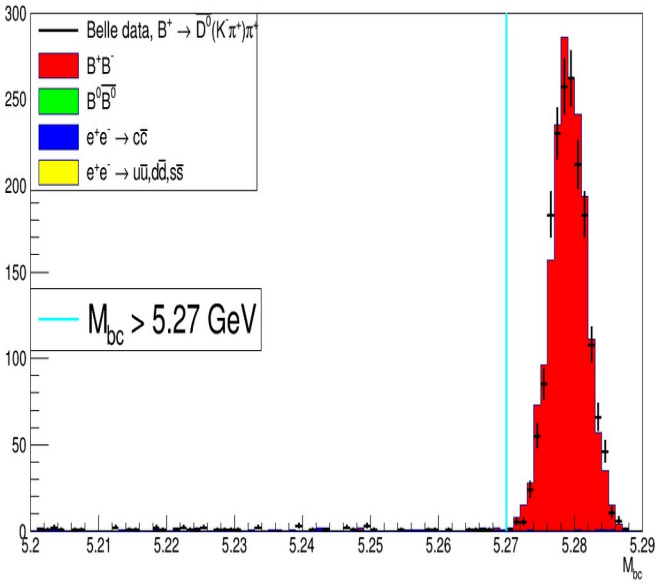
$\cos(p_{Bsig}, p_{Bsig2})$



Control mode $B^+ \to \overline{D}^0(K^+\pi^-)\pi^+$

Before any selection

N_{sig}	N_{B+B-}	$N_{B0\overline{B0}}$	$N_{c\bar{c}}$	N_{uds}	Data/MC
5630	2536	100	1627	406	1.30



After selecting **M_{bc} > 5.27 GeV**

N_{sig}	N_{B+B-}	$N_{B0\overline{B0}}$	$N_{c\bar{c}}$	N_{uds}	Data/MC
2180	2312	45	15	8	0.95

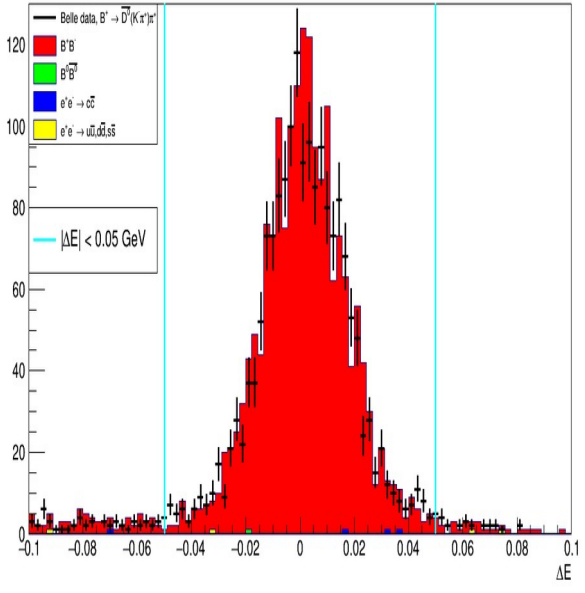
Control mode $B^+ \to \overline{D}^0(K^+\pi^-)\pi^+$

After selecting **M_{bc} > 5.27 GeV**

N_{sig}	N_{B+B-}	$N_{B0\overline{B0}}$	$N_{c\bar{c}}$	N_{uds}	Data/MC
2180	2312	45	15	8	0.95

After selecting **|ΔE| < 0.05 GeV**

N_{sig}	N_{B+B-}	$N_{B0\overline{B0}}$	$N_{c\bar{c}}$	N_{uds}	Data/MC
1739	1816	1.0	3.0	1.0	0.94



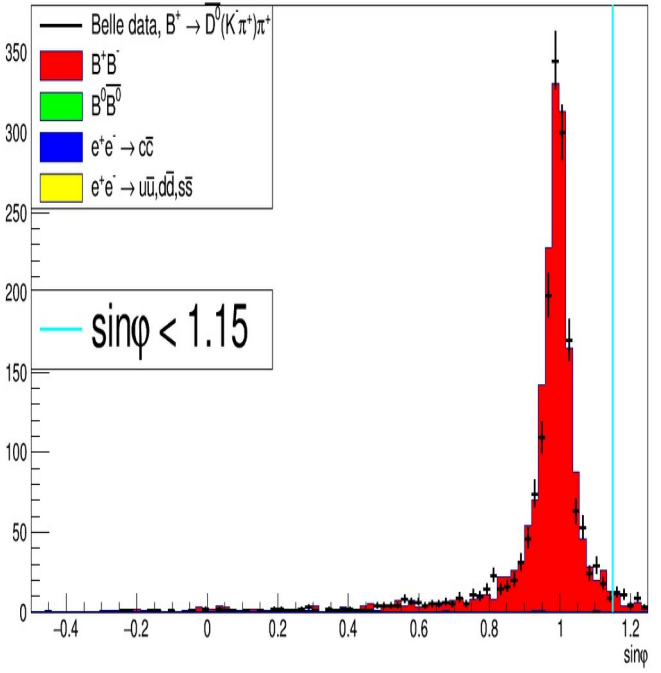
Control mode $B^+ \to \overline{D}^0(K^+\pi^-)\pi^+$

After selecting **|ΔE| < 0.05 GeV**

N_{sig}	N_{B+B-}	$N_{B0\overline{B0}}$	$N_{c\bar{c}}$	N_{uds}	Data/MC
1739	1816	1.0	3.0	1.0	0.94

After selecting **Sinφ < 1.15**

N_{sig}	N_{B+B-}	$N_{B0\overline{B0}}$	$N_{c\bar{c}}$	N_{uds}	Data/MC
1726	1806	1.0	3.0	1.0	0.94



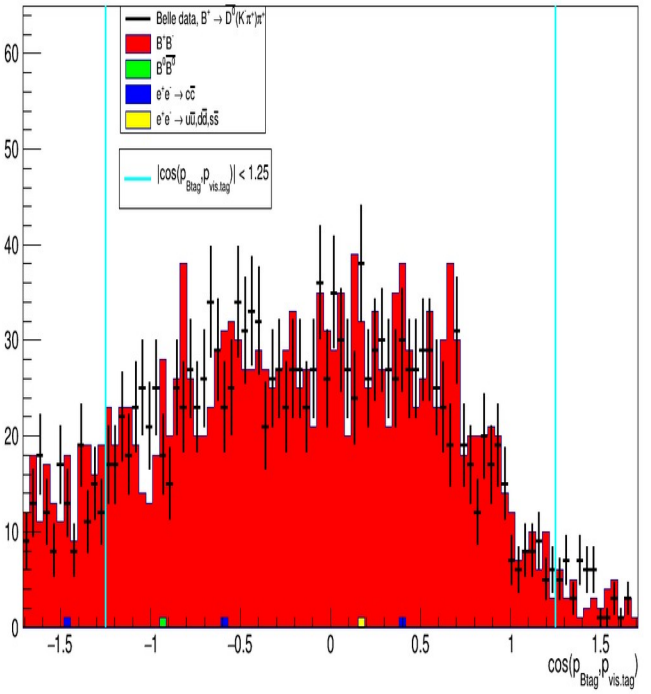
Control mode $B^+ \to \overline{D}^0(K^+\pi^-)\pi^+$

After selecting **Sinφ < 1.15**

N_{sig}	N_{B+B-}	$N_{B0\overline{B0}}$	$N_{c\bar{c}}$	N_{uds}	Data/MC
1726	1806	1.0	3.0	1.0	0.94

After selecting **$|\cos(p_{Btag},p_{vis.tag})| < 1.25$**

N_{sig}	N_{B+B-}	$N_{B0\overline{B0}}$	$N_{c\bar{c}}$	N_{uds}	Data/MC
1521	1587	1.0	2.0	1.0	0.94



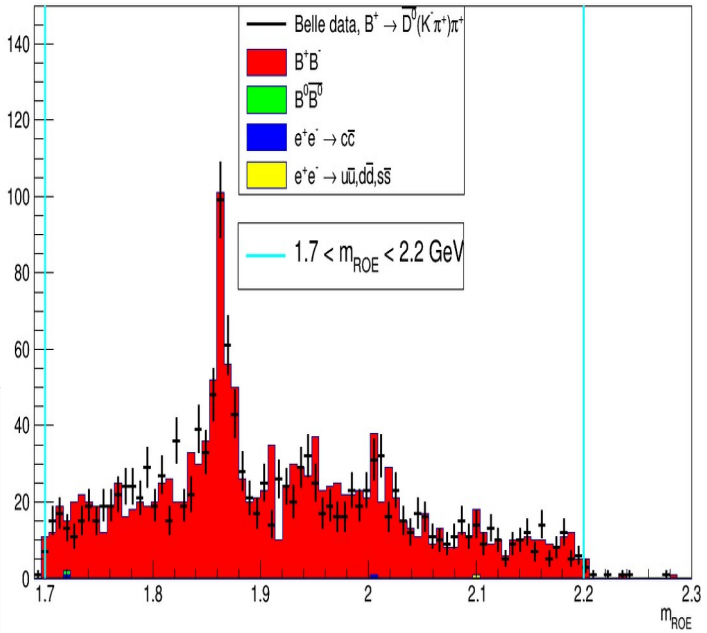
Control mode $B^+ \to \overline{D}^0(K^+\pi^-)\pi^+$

After selecting $\mathbf{|\cos(p_{Btag}, p_{vis.tag})| < 1.25}$

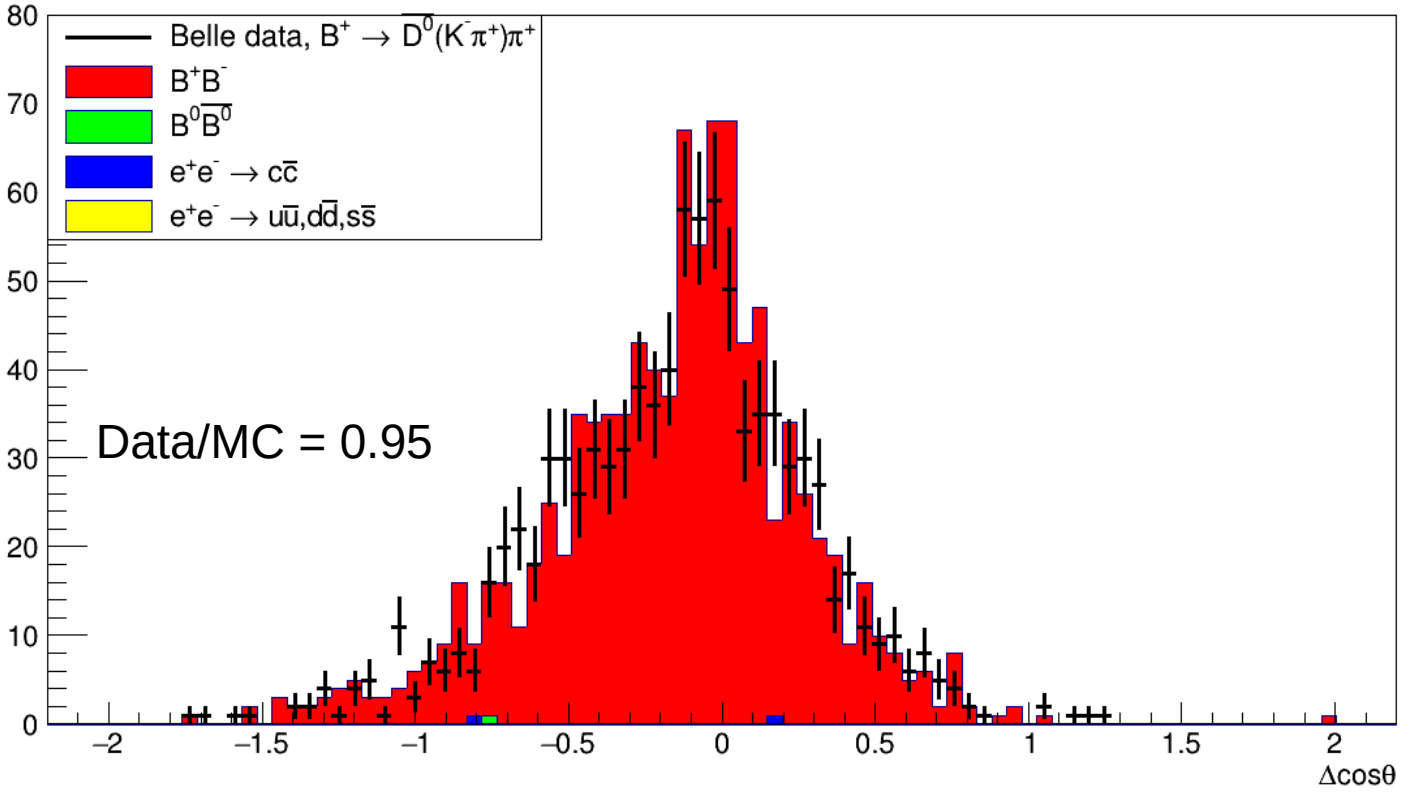
N_{sig}	N_{B+B-}	$N_{B0\overline{B0}}$	$N_{c\bar{c}}$	N_{uds}	Data/MC
1521	1587	1.0	2.0	1.0	0.94

After selecting $\mathbf{1.7 < m_{ROE} < 2.2\ GeV}$

N_{sig}	N_{B+B-}	$N_{B0\overline{B0}}$	$N_{c\bar{c}}$	N_{uds}	Data/MC
1493	1551	1.0	2.0	1.0	0.95



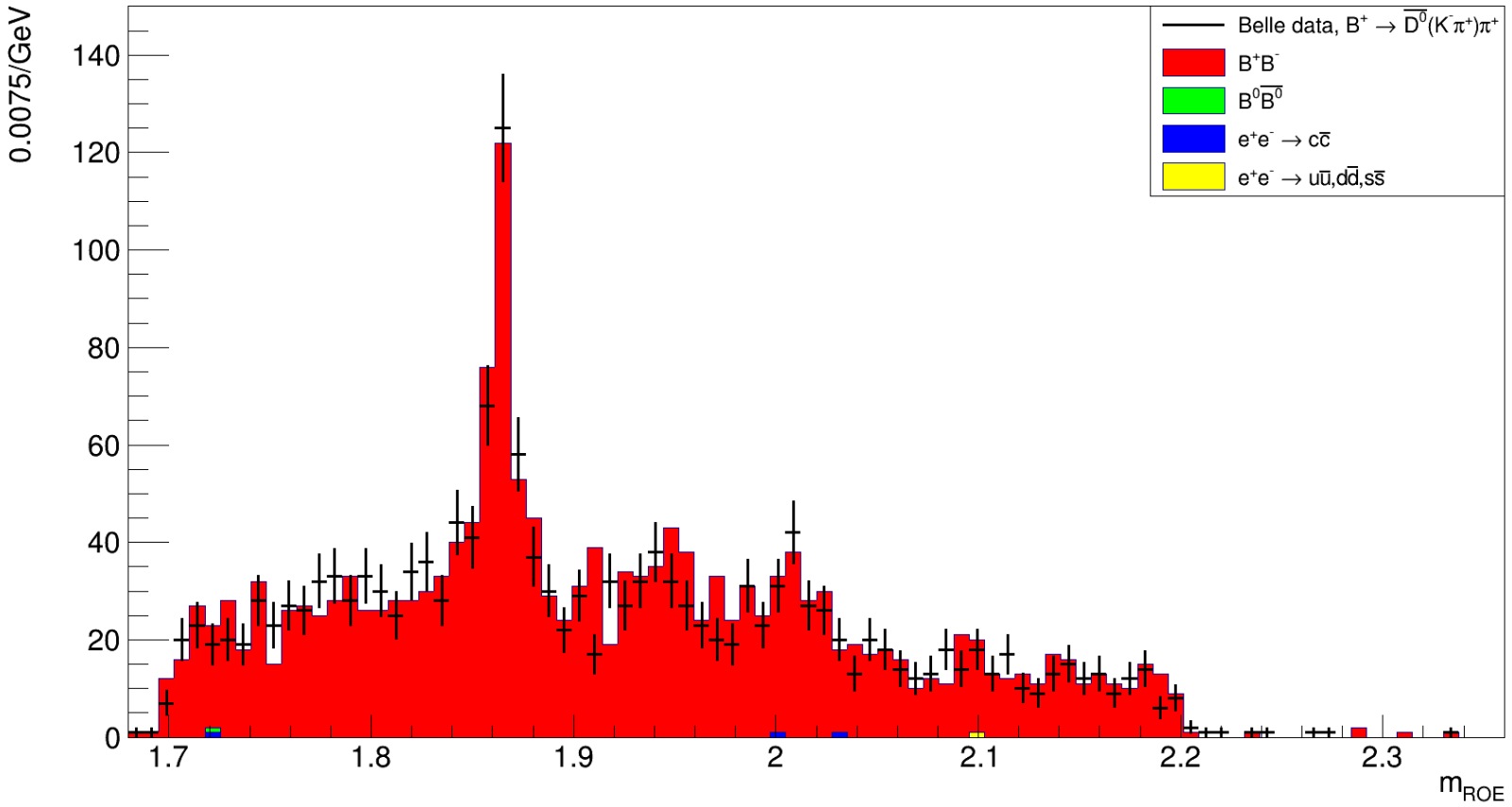
$\Delta\cos\theta$ for $B^+ \to \overline{D}^0(K^+\pi^-)\pi^+$



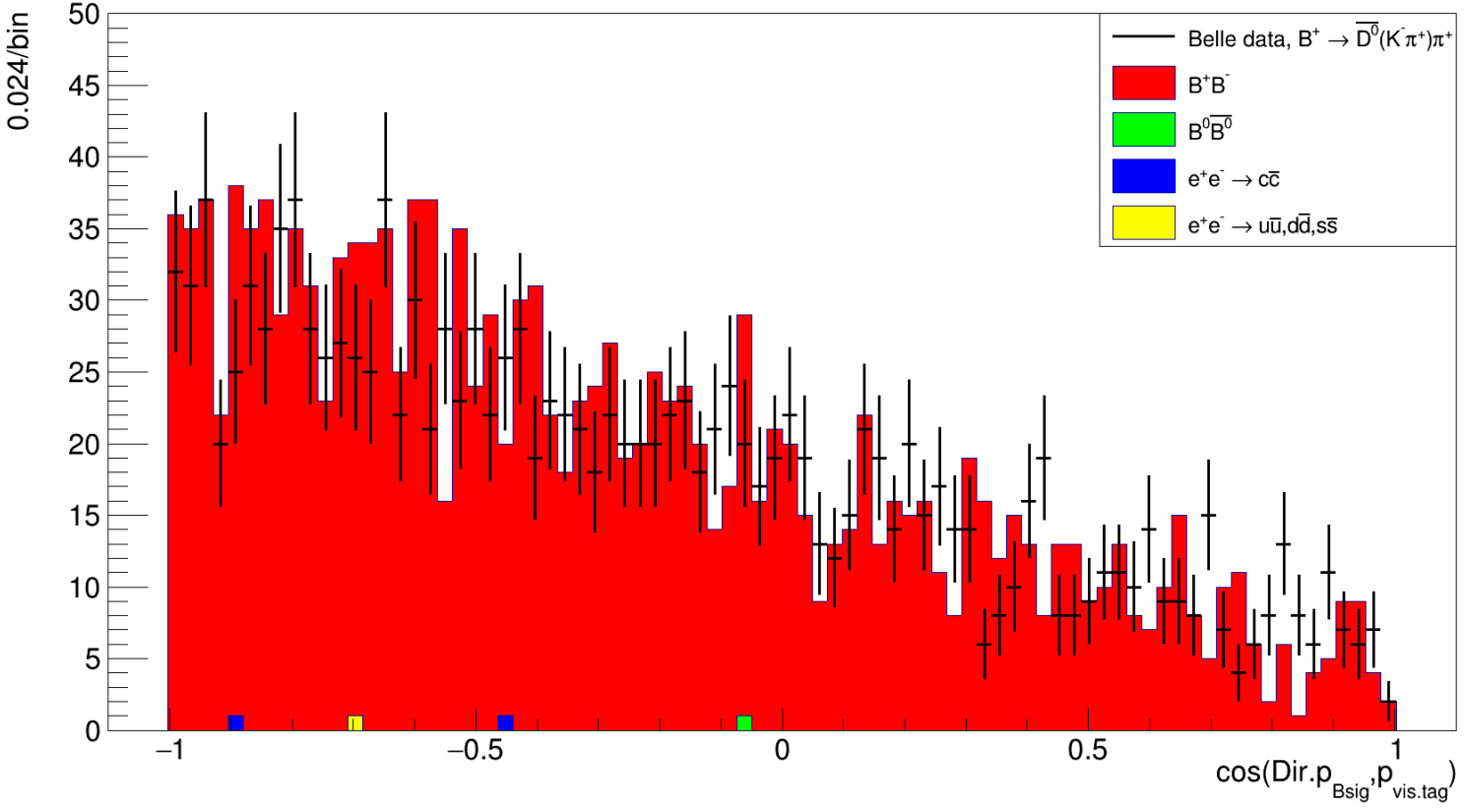
N_{DATA} = 1493 ± 39
N_{MC} = 1555 ± 39

Additional plots for $B^+ \to \overline{D}^0(K^+\pi^-)\pi^+$

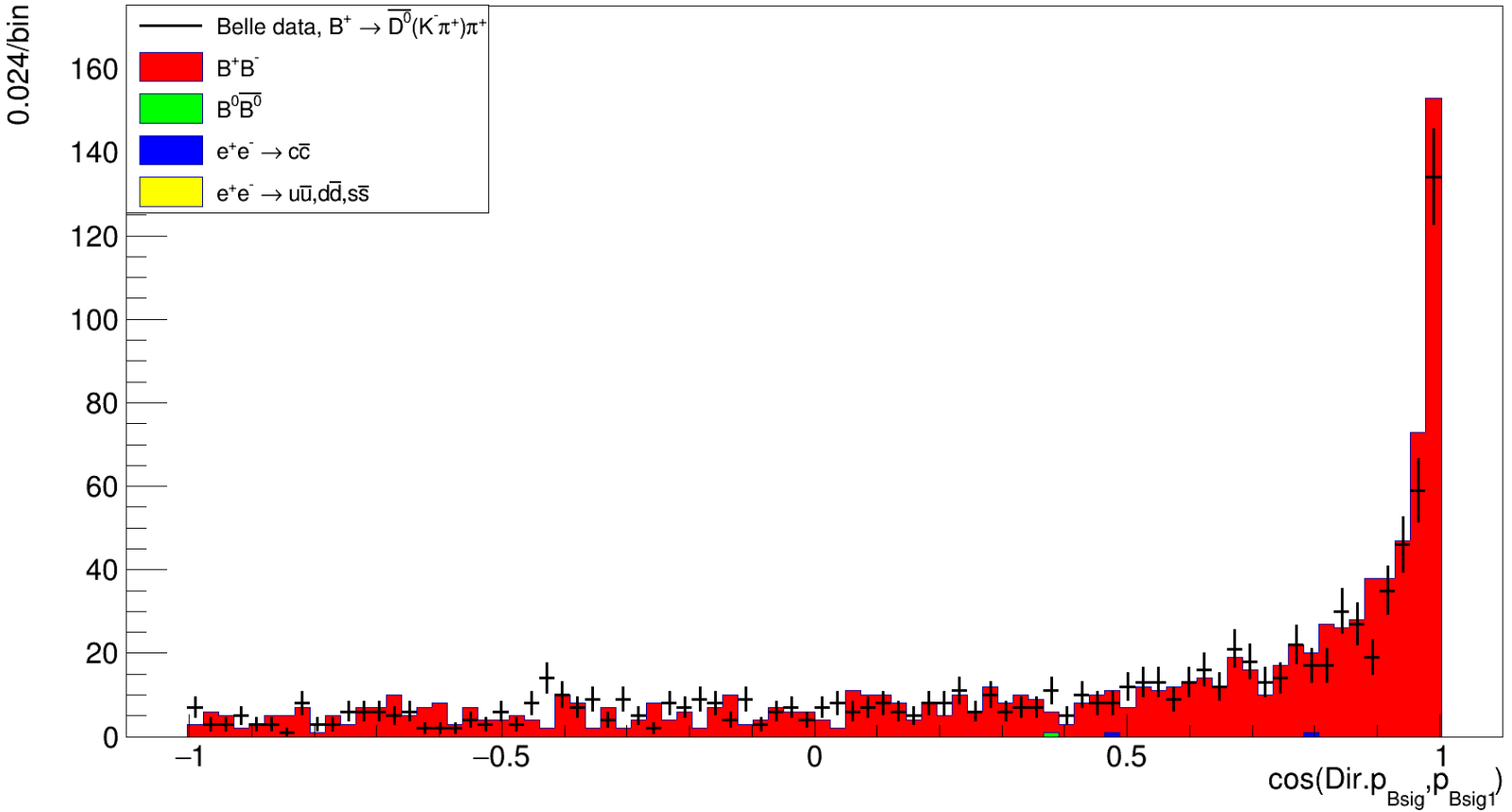
m_{ROE} without **Sinφ** cut



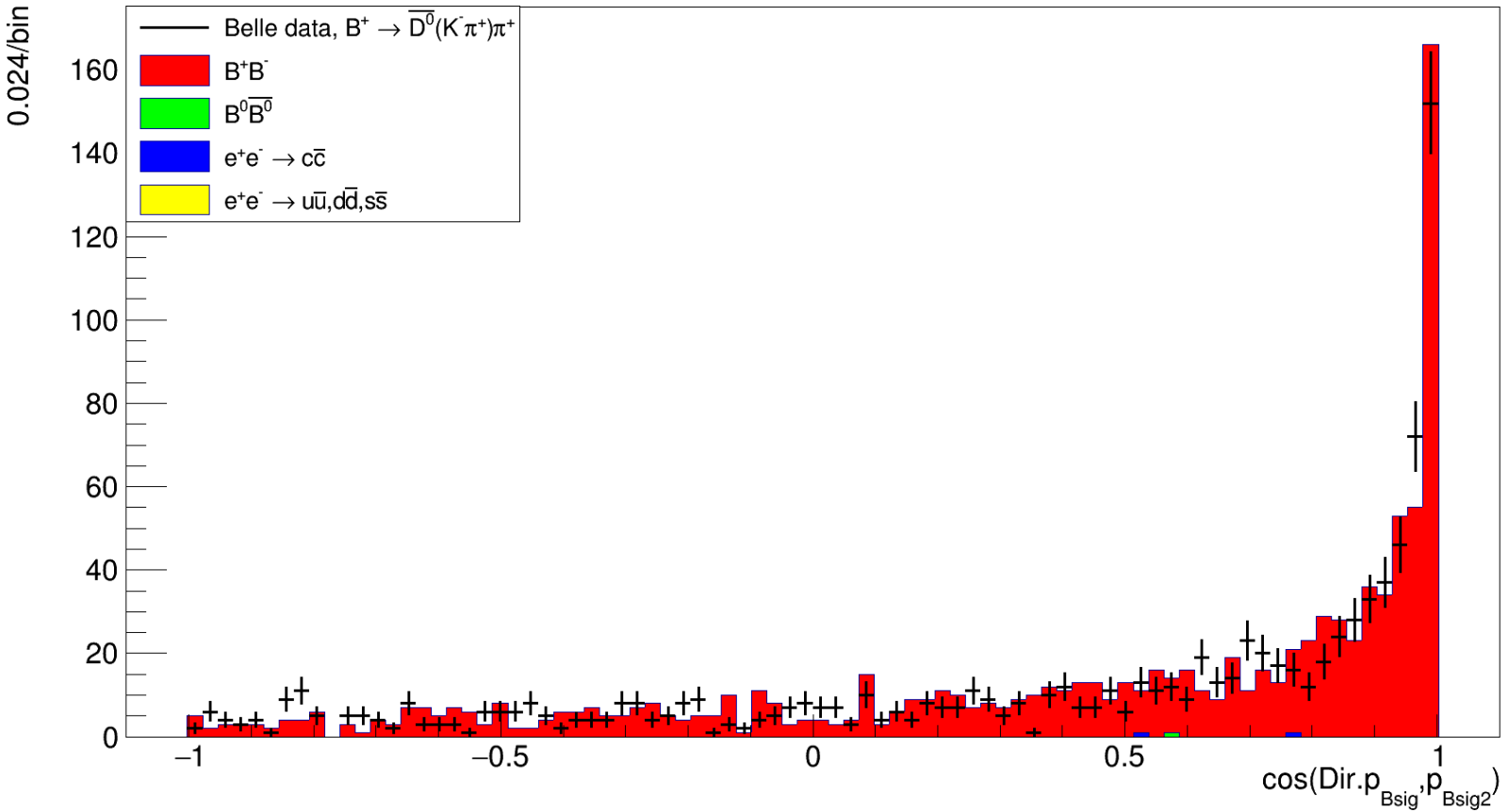
$\cos(p_{Bsig}, p_{vis.tag})$



$\cos(p_{Bsig}, p_{Bsig1})$



$\cos(p_{Bsig}, p_{Bsig2})$



Back up

Decay modes of tau

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----------------------------------------

A1. (1193)  B+ -> K+ tau- mu+
               tau- -> pi- nu_tau

B1. (913)  B+ -> K+ tau- mu+
               tau- -> e- nu_tau anti-nu_e

C1. (859)  B+ -> K+ tau- mu+
               tau- -> mu- nu_tau anti-nu_mu

D1. (693)  B+ -> K+ tau- mu+
               tau- -> rho- nu_tau

E1. (119)  B+ -> K+ tau- mu+
               tau- -> a_1- nu_tau

F1. (77)  B+ -> K+ tau- mu+
               tau- -> e- nu_tau anti-nu_e gamma

G1. (24)  B+ -> K+ tau- mu+
               tau- -> pi- nu_tau gamma

H1. (20)  B+ -> K+ tau- mu+
               tau- -> mu- nu_tau anti-nu_mu gamma

I1. (11)  B+ -> K+ tau- mu+
               tau- -> K- nu_tau

J1. (7)  B+ -> K+ tau- mu+
               tau- -> nu_tau pi- pi+ pi- pi0
----------------------------------------
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Decay modes of B^+B^-

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A1. (447)  B+ -> anti-D*0 mu+ nu_mu
               anti-D*0 -> anti-D0 pi0

B1. (39)   B+ -> anti-D*0 e+ nu_e
               anti-D*0 -> anti-D0 pi0

C1. (22)   B+ -> anti-D*0 e+ nu_e
               anti-D*0 -> anti-D0 gamma

D1. (21)   B+ -> anti-D*0 mu+ nu_mu
               anti-D*0 -> anti-D0 gamma

E1. (15)   B+ -> anti-D0 pi+
               anti-D0 -> K+ mu- anti-nu_mu

F1. (13)   B+ -> anti-D0 mu+ nu_mu
               anti-D0 -> K+ mu- anti-nu_mu

G1. (12)   B+ -> anti-D*0 pi+
               anti-D*0 -> anti-D0 pi0

H1. (11)   B+ -> anti-D0 e+ nu_e
               anti-D0 -> K+ e- anti-nu_e

I1. (10)   B+ -> anti-D0 mu+ nu_mu
               anti-D0 -> K+ e- anti-nu_e

J1. (10)   B+ -> anti-D0 pi+
               anti-D0 -> K+ e- anti-nu_e
----------------------------------------

A2. (426)  B- -> D*0 mu- anti-nu_mu
               D*0 -> D0 pi0

B2. (30)   B- -> D*0 e- anti-nu_e
               D*0 -> D0 pi0

C2. (29)   B- -> D*0 mu- anti-nu_mu
               D*0 -> D0 gamma

D2. (22)   B- -> D*0 e- anti-nu_e
               D*0 -> D0 gamma

E2. (20)   B- -> D*0 pi-
               D*0 -> D0 pi0

F2. (12)   B- -> D0 mu- anti-nu_mu
               D0 -> K- mu+ nu_mu

G2. (12)   B- -> D0 pi-
               D0 -> K- e+ nu_e
```