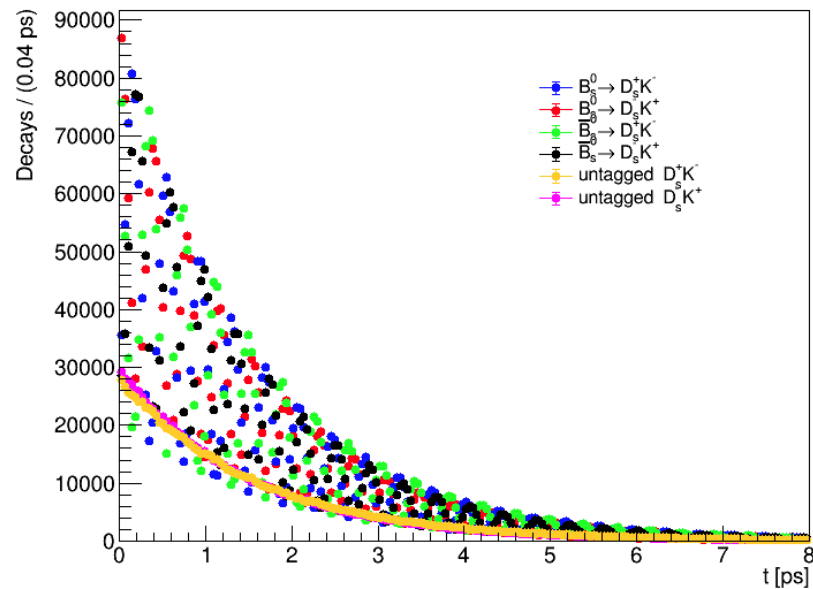


Bs2DsK toyMC

item	value	error	source
b b_bar statics	$0.152 \cdot 10^{12}$?	zmr'paper
b_bar -> Bs0 (b -> Bs0_bar)	8%	1%	whizard & zmr'paper
Br(Bs->DsK)	$2.25 \cdot 10^{-4}$	$0.12 \cdot 10^{-4}$	PDG
eff_tag of Bs	80%		Particle net
mis_tag of Bs	15%		Particle net
time resolution			
time acceptance			



Bs2DsK toyMC

1. Without detector effects, the uncertainty of $\gamma - 2\beta_s$ is estimated to be 0.0016 (i.e. 0.092°).

toyMC input

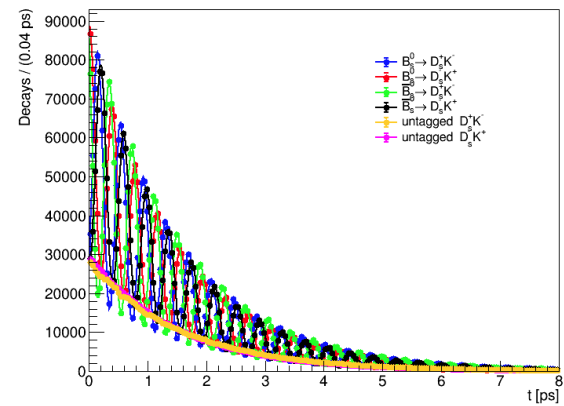
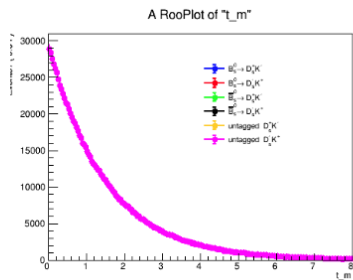
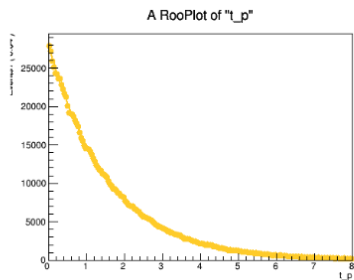
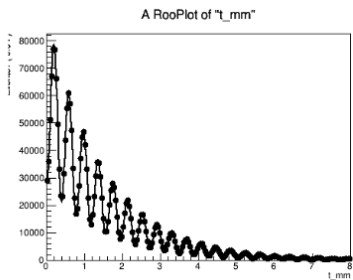
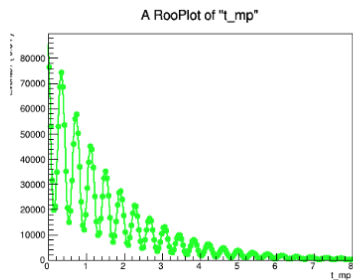
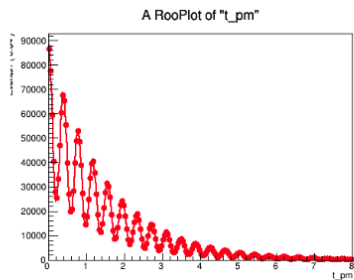
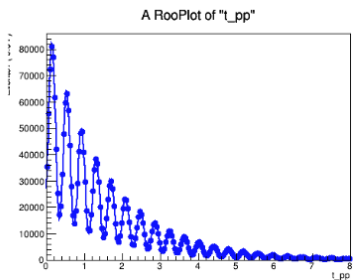
- 2.736*10⁶ Events per channels

vars	value
$\gamma - 2\beta_s$	1.22
r	0.4
δ	1
Γ	0.65
$\Delta\Gamma$	0.065
ΔM	16.25
eff_{tag}	0.8
ω_{tag}	0.15

toyMC output

vars	value	error
$\gamma - 2\beta_s$	1.2192	0.0016
r	0.39983	0.00052
δ	0.9997	0.0014
Γ	0.64993	0.00021
$\Delta\Gamma$	0.06497	0.00052
ΔM	16.24986	0.00051
eff_{tag}	0.8	fixed
ω_{tag}	0.15	fixed

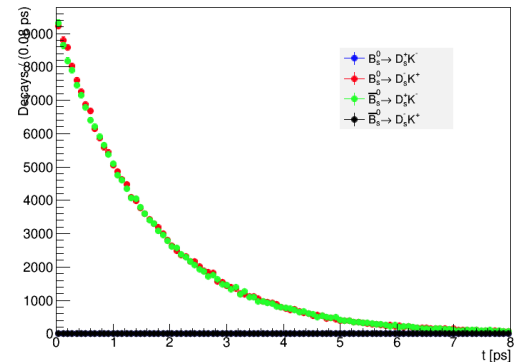
Bs2DsK toyMC



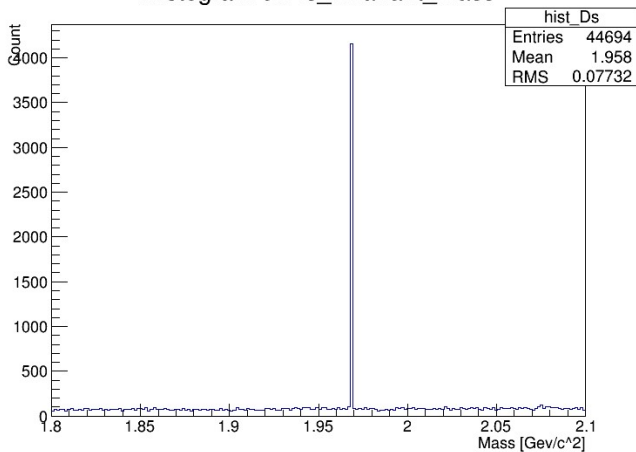
Bs2DsK Reco at Truth Level

</afs/ihep.ac.cn/users/m/mzhao/workdir/BsDsK/GenBsDsK/data>

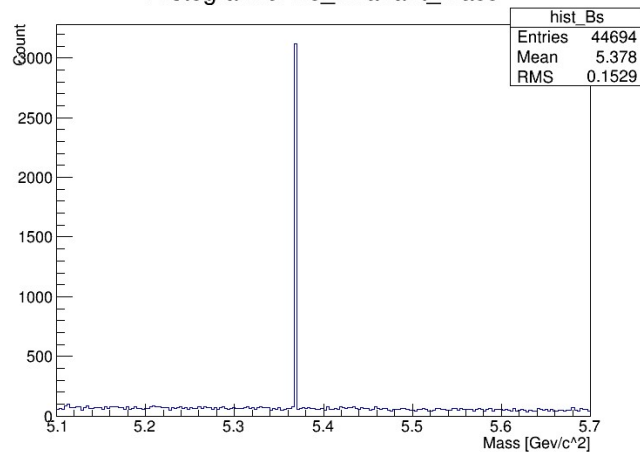
```
const double BsMass = 5.3693;  
const double DsMass = 1.9685;  
const double BsMass_tole = BsMass*0.2;  
const double DsMass_tole = DsMass*0.2;
```



Histogram of Ds_invariant_mass



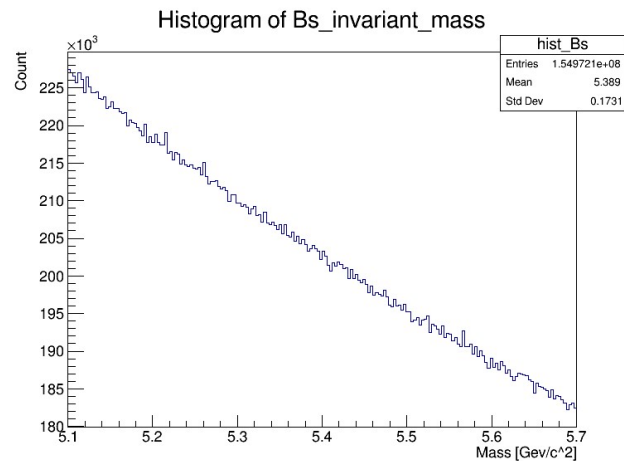
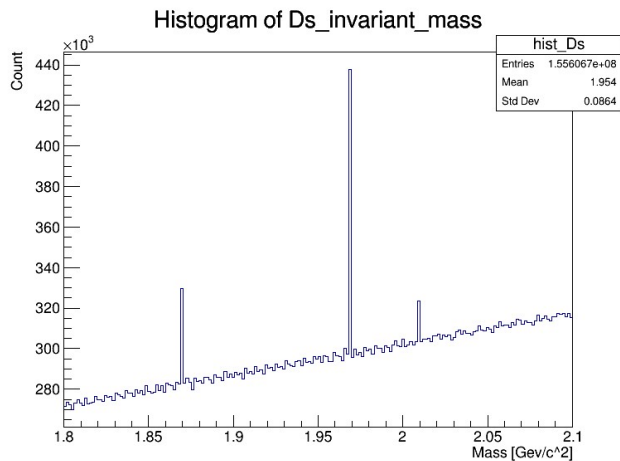
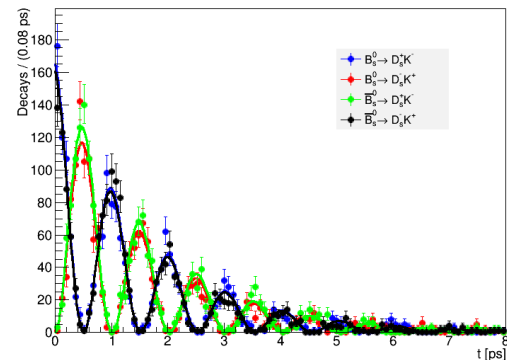
Histogram of Bs_invariant_mass



Bs2DsK Reco at Truth Level

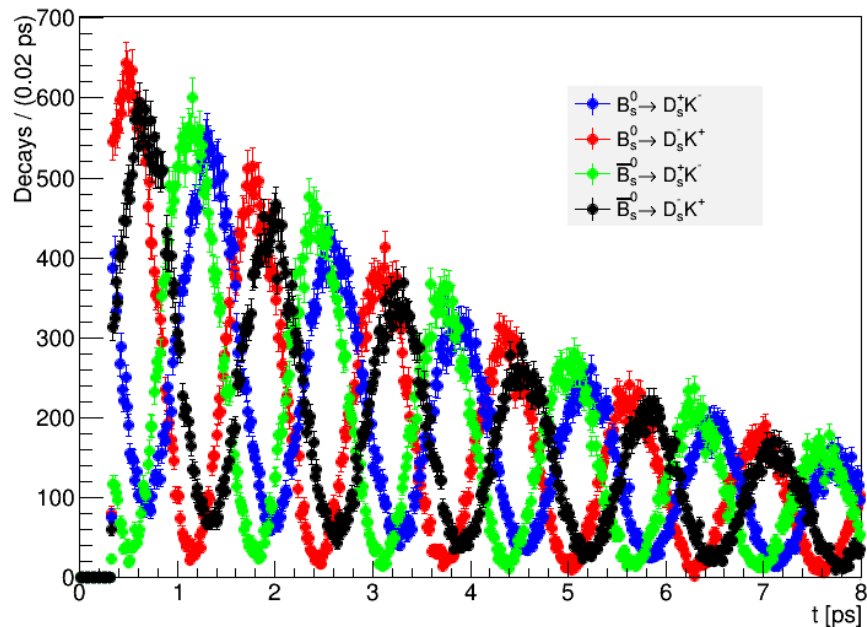
/cefs/data/stdhep/CEPC91/2fermions/4ML_GigaZ_2/bb

```
const double BsMass = 5.3693;  
const double DsMass = 1.9685;  
const double BsMass_tole = BsMass*0.2;  
const double DsMass_tole = DsMass*0.2;
```



Bs2DsK decay time DIY

[/afs/ihep.ac.cn/users/m/mzhao/workdir/BsDsK/ToyBsDsK/data](https://afs.ihep.ac.cn/users/m/mzhao/workdir/BsDsK/ToyBsDsK/data)



Back Up

Bs2DsK

$$P_{++} \propto e^{-\Gamma t} \left(\cosh\left(\frac{\Delta\Gamma}{2}t\right) - C \cos(\Delta mt) + D_{\bar{f}} \sinh\left(\frac{\Delta\Gamma}{2}t\right) - S_{\bar{f}} \sin(\Delta mt) \right) \quad (19)$$

$$P_{+-} \propto e^{-\Gamma t} \left(\cosh\left(\frac{\Delta\Gamma}{2}t\right) + C \cos(\Delta mt) + D_{\bar{f}} \sinh\left(\frac{\Delta\Gamma}{2}t\right) - S_{\bar{f}} \sin(\Delta mt) \right) \quad (20)$$

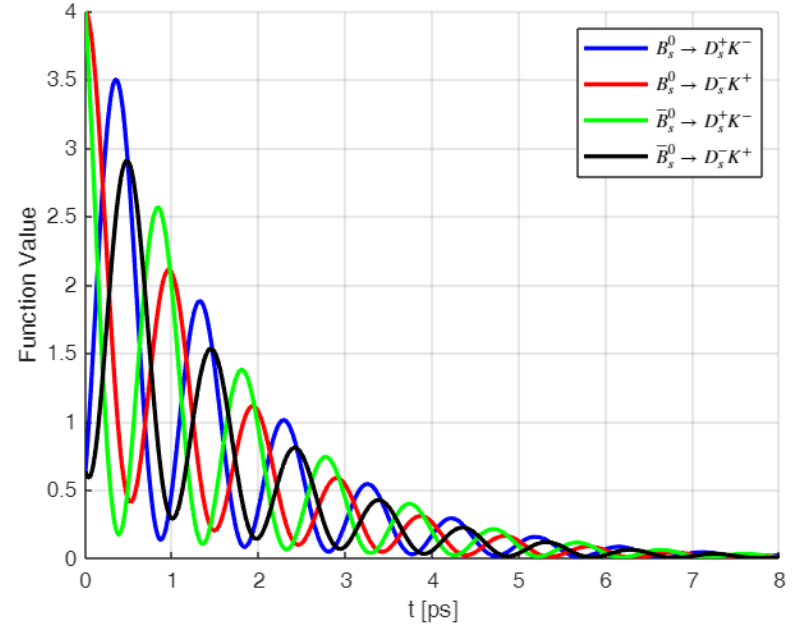
$$P_{-+} \propto e^{-\Gamma t} \left(\cosh\left(\frac{\Delta\Gamma}{2}t\right) + C \cos(\Delta mt) + D_{\bar{f}} \sinh\left(\frac{\Delta\Gamma}{2}t\right) + S_{\bar{f}} \sin(\Delta mt) \right) \quad (21)$$

$$P_{--} \propto e^{-\Gamma t} \left(\cosh\left(\frac{\Delta\Gamma}{2}t\right) - C \cos(\Delta mt) + D_{\bar{f}} \sinh\left(\frac{\Delta\Gamma}{2}t\right) + S_{\bar{f}} \sin(\Delta mt) \right) \quad (22)$$

$$C = \frac{1-r^2}{1+r^2}, \quad (23)$$

$$D_f = \frac{-2r \cos(\delta - (\gamma - 2\beta_s))}{1+r^2}, \quad D_{\bar{f}} = \frac{-2r \cos(\delta + (\gamma - 2\beta_s))}{1+r^2}, \quad (24)$$

$$S_f = \frac{2r \sin(\delta - (\gamma - 2\beta_s))}{1+r^2}, \quad S_{\bar{f}} = \frac{-2r \sin(\delta + (\gamma - 2\beta_s))}{1+r^2}. \quad (25)$$



Feynman diagram of Bs2DsK

