

*Compare  $\mathcal{B}(D^+ \rightarrow K^+ 2K_S^0)$  with BAM-210*

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# Outline

① *Large difference*

② *Summary*

- ✓ Wang Yue first measure  $\mathcal{B}(D^+ \rightarrow K^+ 2K_S^0)$ , see **BAM-210**.

item	value
BAM-210	$(2.54 \pm 0.05 \pm 0.12) \times 10^{-3}$
Me	$(2.98 \pm 0.04 \pm 0.12) \times 10^{-3}$
Difference	0.44(15%)

## Source of difference

- A) requirement on  $K_S^0$
- B) The number of  $D\bar{D}$  pairs
- C) Correct factor
- D) Model

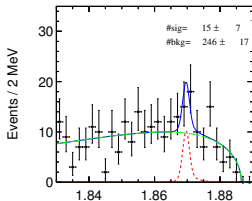
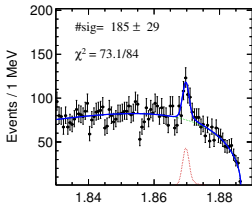
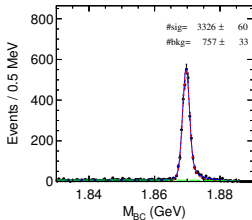
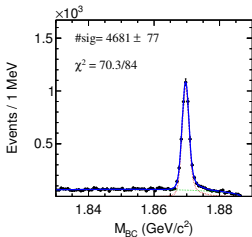
## Requirement on $K_S^0$

- ✓ Me: No second vertex Fit
- ✓ Yue: Perform second vertex Fit

**Conclusion:** The uncertainty for  $K_S$  reconstruction is difference. Assign 1.5% to each  $K_S$ .

# Second vertex Fit

- ✓ Lose 28% efficiency, due to the second vertex fit.



A) **BAM-210**

- ✓ adopt the cross section of  $D\bar{D}$  measured by CLEO Collaboration

$$N_{D^+D^-} = \sigma_{D^+D^-} \cdot L = (8407 \pm 155) \times 10^3 \quad (1)$$

B) Me

- C) Adopt the  $N_{D^+D^-}$  measured by Hajime

$$N_{D^+D^-} = (8296 \pm 31 \pm 65) \times 10^3 \quad (2)$$

**Conclusion:** The difference is  $1.3 \pm 2.0\%$ .

## A) BAM-210

✓ PHSP

✓  $10\% a^+$  , + 90% PHSP to determined uncertainty: 1%

## B) Me:

$$FF(a_0(980)) = (45.1 \pm 6.8)\% \quad (3)$$

model	$\epsilon(\%)$
none-res	$19.7 \pm 0.01$
$a_0(980)^+$	$18.12 \pm 0.03$

**Conclusion:** Difference caused by model is about 3.8%.



# Correct Factor

A) BAM-210: correct efficiency, 1.059

- ✓ tracking
- ✓ PID
- ✓  $K_S$  reconstruction

B) Me: No correct factor

**Conclusion** : Cause 5.9% difference in the BF.

# Summary

source	contribution
$N_{D^+D^-}$	$1.3 \pm 2.0\%$
model	3.8%
requirement on $K_S^0$	-
correct factor	5.9%

Once the differences revised, the relative difference between two results will be 4%, that is comparable with statistical fluctuation.