pXp analysis

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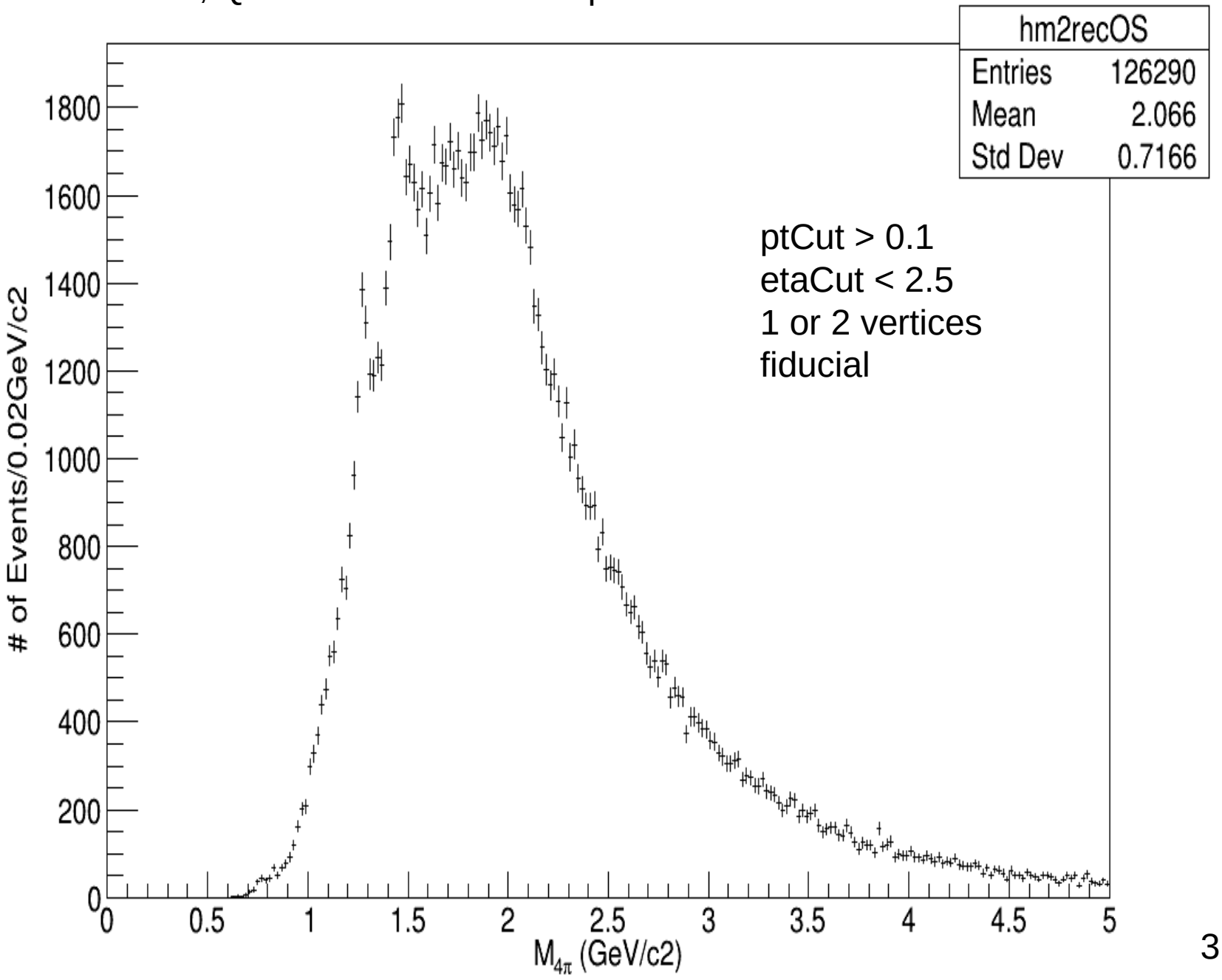
Overview

- 4 pions mass distributions

- 4-track 2015 sample

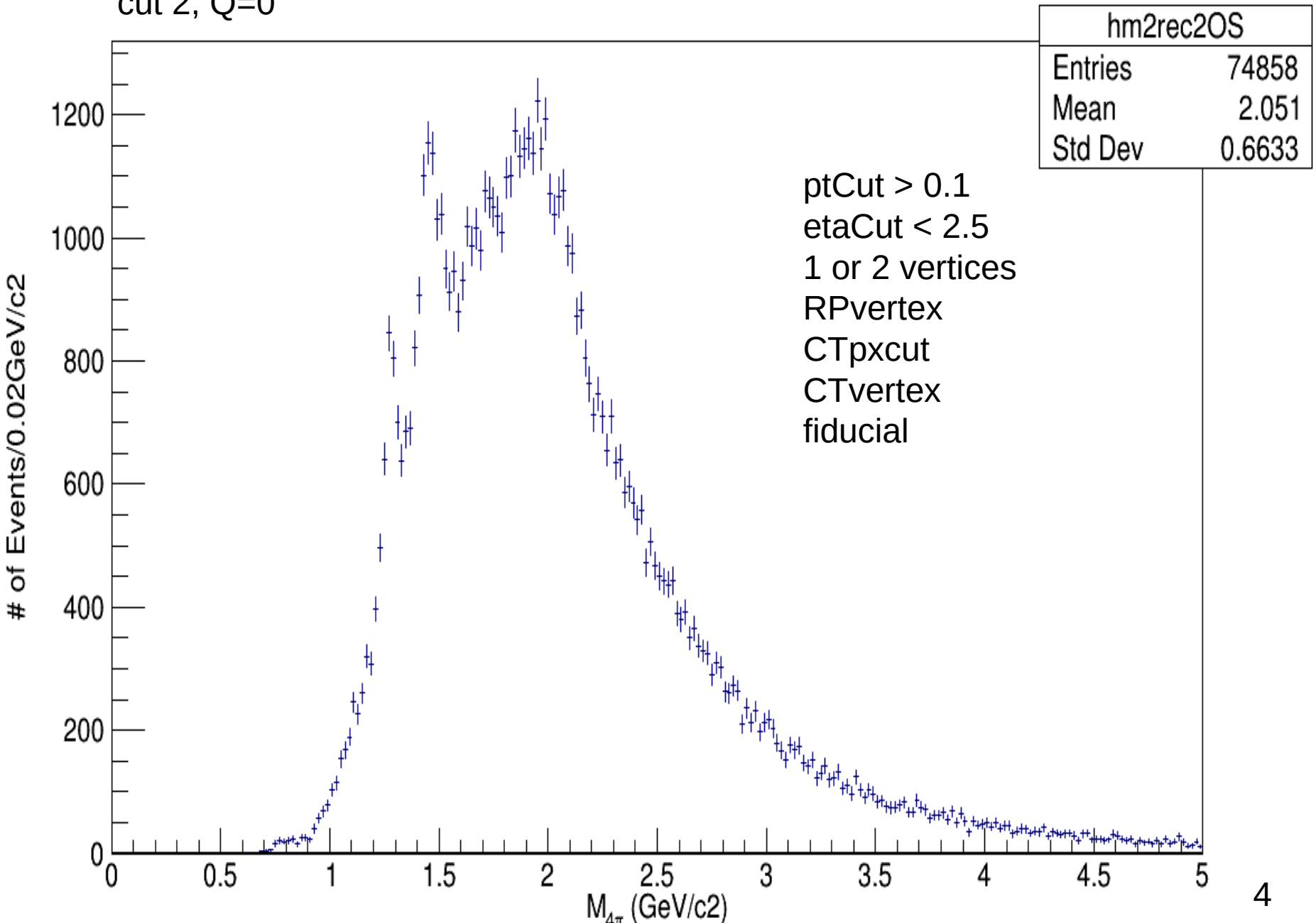
cut 1, Q=0

M 4 pions



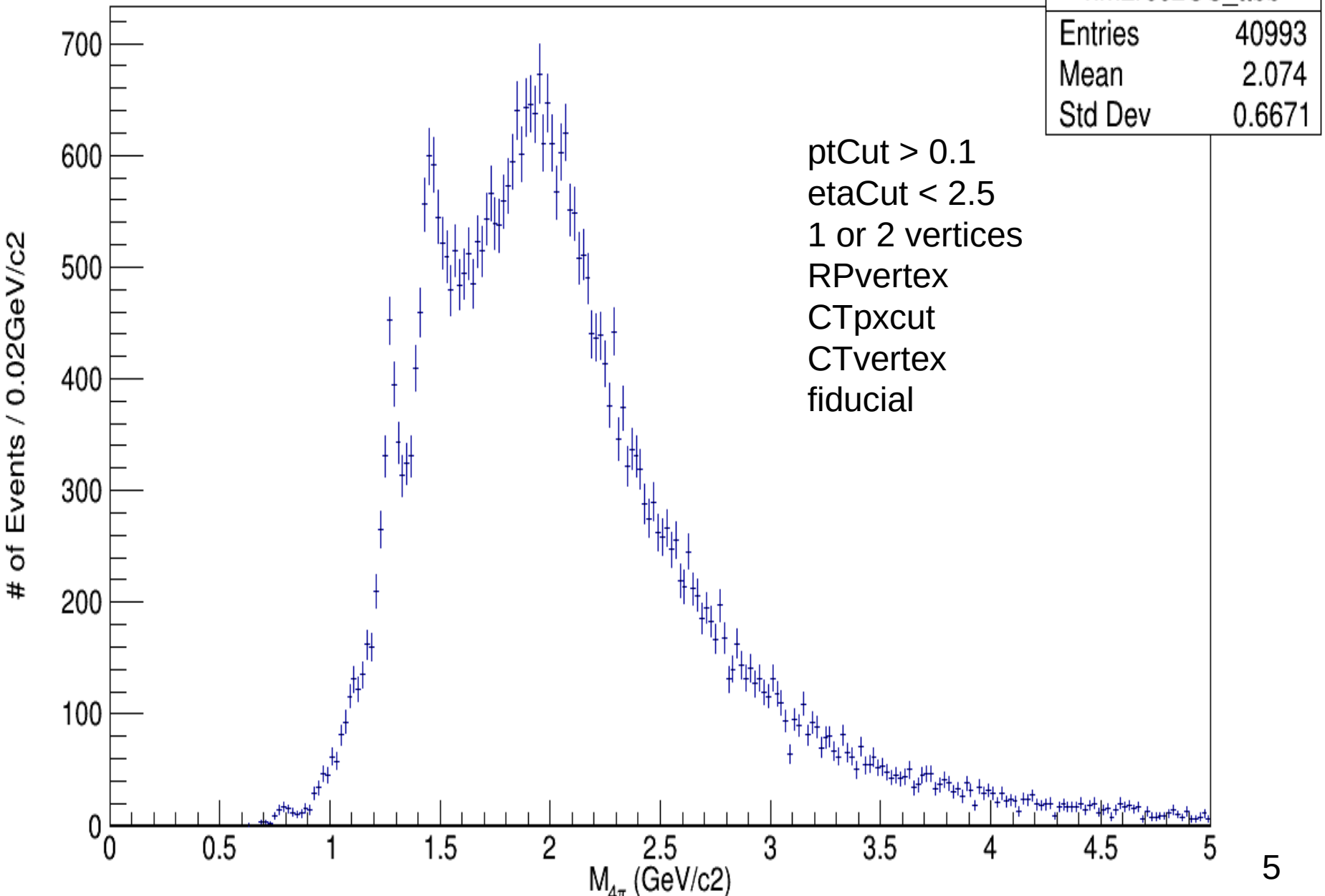
M 4 pions

cut 2, Q=0



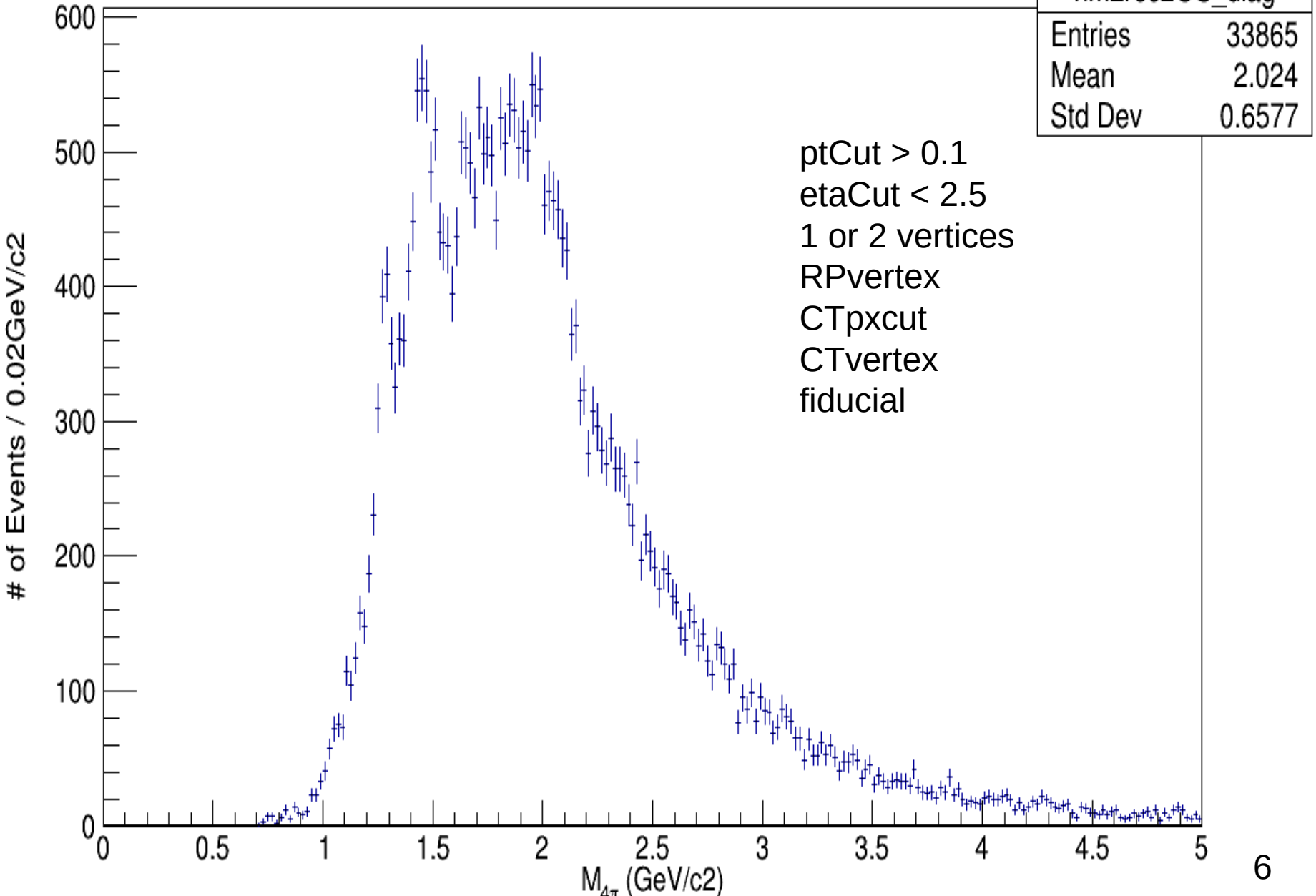
M 4 pions TTBB

cut 2, Q=0

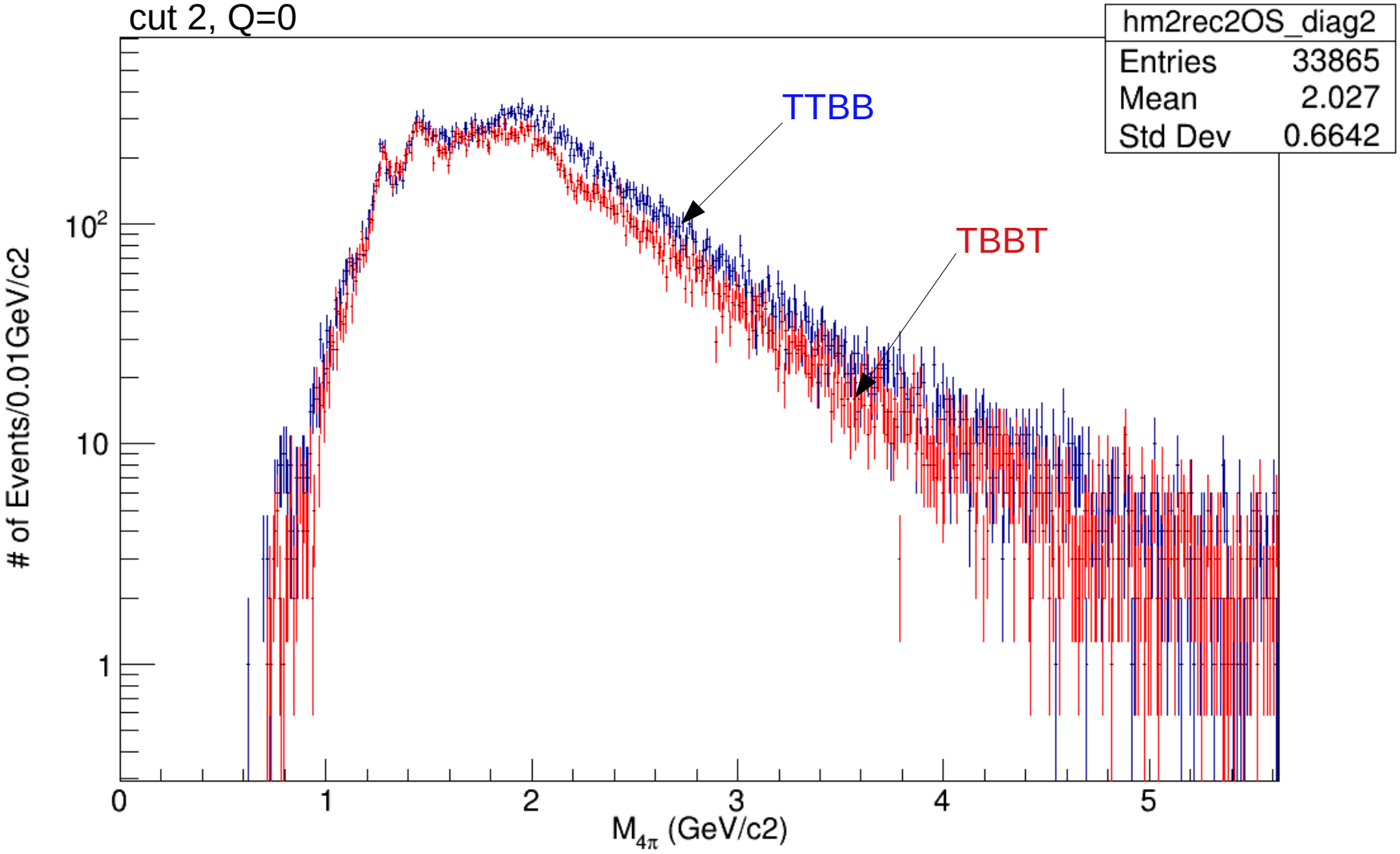


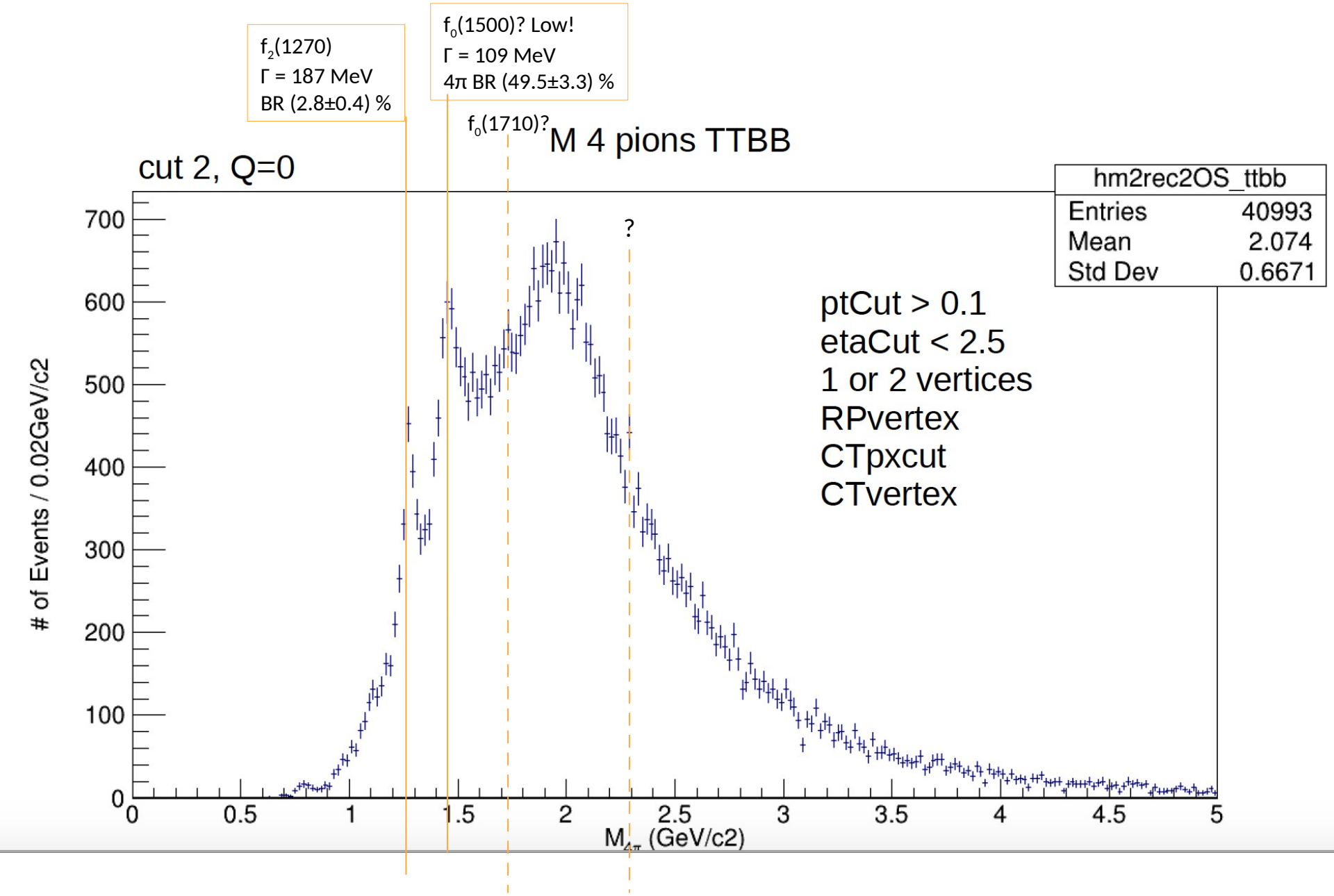
M 4 pions TB/BT

cut 2, Q=0



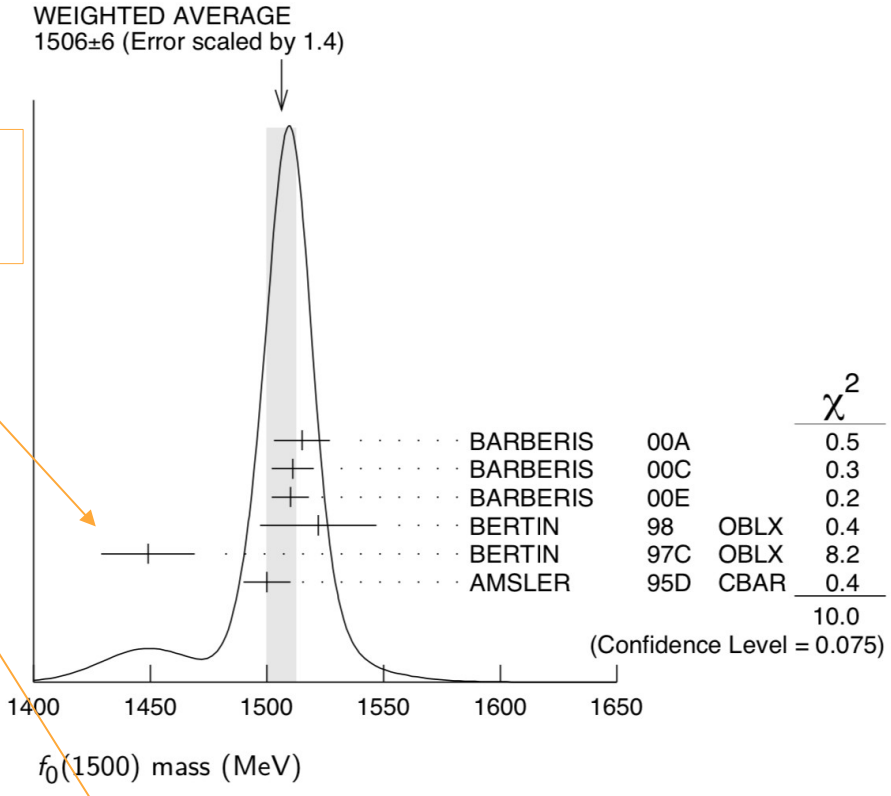
M 4 pions TTBB + TBBT




f2(1270)
Γ = 187 MeV
BR (2.8±0.4) %
f0(1500)? Low!
Γ = 109 MeV
4π BR (49.5±3.3) %
f0(1710)?
M 4 pions TTBB
cut 2, Q=0
hm2rec2OS_ttbb
Entries 40993
Mean 2.074
Std Dev 0.6671
?
ptCut > 0.1
etaCut < 2.5
1 or 2 vertices
RPvertex
CTpxcut
CTvertex
# of Events / 0.02GeV/c2
M4π (GeV/c2)

From PDG 2018 big book on f0(1500)

Is this a bad measurement or a different state?



1505	±15	[18] AMSLER	95C	CBAR	0.0 $\bar{p}p \rightarrow \eta\eta\pi^0$
1445	± 5	[19] ANTINORI	95	OMEG	300,450 $pp \rightarrow pp2(\pi^+\pi^-)$
1497	±30	[11] ANTINORI	95	OMEG	300,450 $pp \rightarrow pp\pi^+\pi^-$
~ 1505		BUGG	95	MRK3	$J/\psi \rightarrow \gamma\pi^+\pi^-\pi^+\pi^-$
1446	± 5	[11] ABATZIS	94	OMEG	450 $pp \rightarrow pp2(\pi^+\pi^-)$

Superceded by Antinori's later paper

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A further study of the centrally produced $\pi^+\pi^-$ and $\pi^+\pi^-\pi^+\pi^-$ channels in pp interactions at 300 and 450 GeV/c

WA91 Collaboration, F. Antinori [d], D. Barberis [d], A. Bayes [c], W. Beusch [d], J.N. Carney [c], S. Clewer [c], J.P. Davies [c], D. Di Bari [b], C.J. Dodenhoff [c], D. Evans [c], D. Elia [b], R. Fini [b], B.R. French [d], B. Ghidini [b], A. Jacholkowski [d], J.B. Kinson [c], A. I [d] ... M.F. Votruba [c]

Abstract

An analysis of the centrally produced $\pi^+\pi^-$ and $\pi^+\pi^-\pi^+\pi^-$ mass spectra from the WA76 and WA91 experiments is presented, which shows that in the $\pi^+\pi^-\pi^+\pi^-$ channel there are two new states, the $f_0(1450)$ and $f_2(1900)$. There is another new state in the $\pi^+\pi^-$ channel with $M = 1497 \pm 30$ MeV and $\Gamma = 199 \pm 30$ MeV, which is compatible with the $f_0(1520)$ observed by the Crystal Barrel experiment. Another interpretation is discussed, where the 1450 and 1497 GeV structures are explained as being due to an interference effect between the $f_0(1365)$ and $f_0(1520)$.

for the simulation: **GRANIITTI** is working fine on my Fedora 29

Thanks for your kind help and attention !