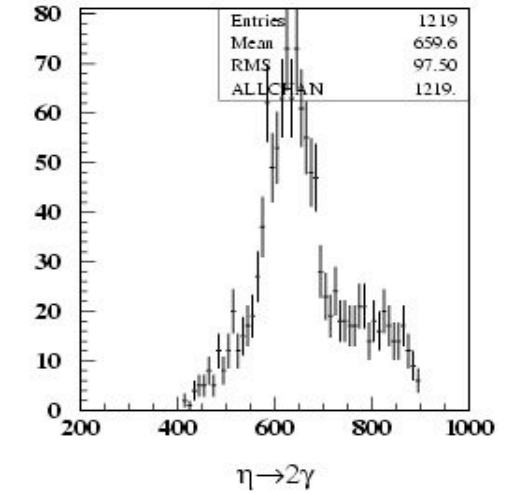
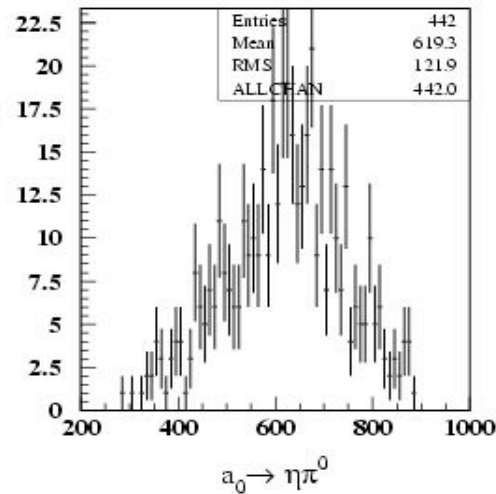
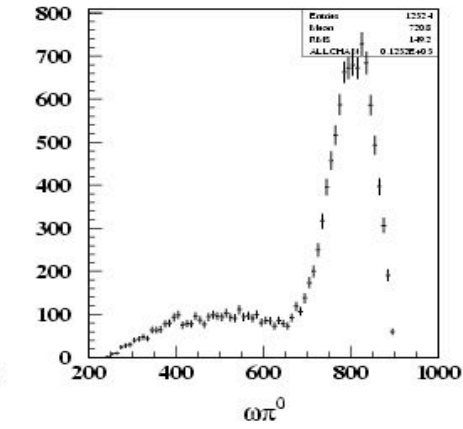
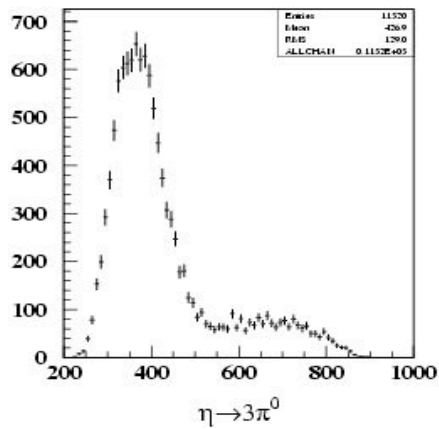
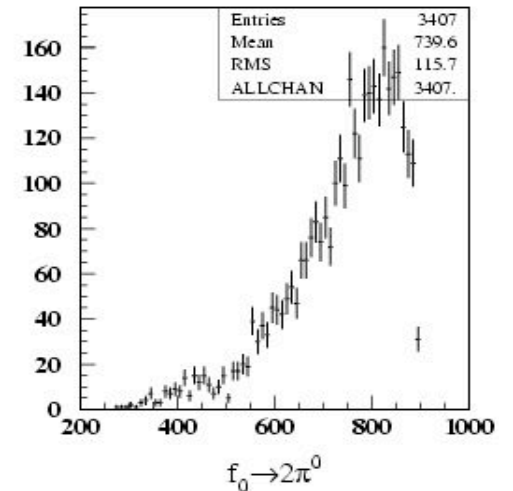
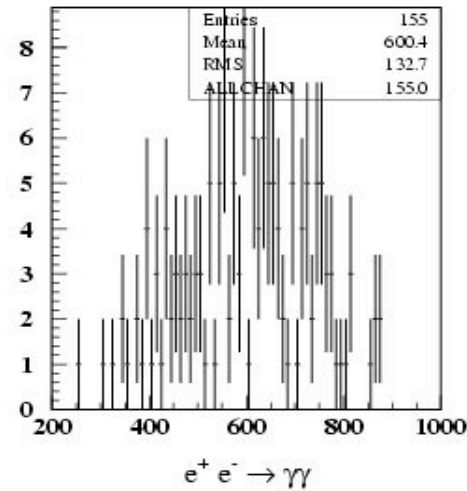
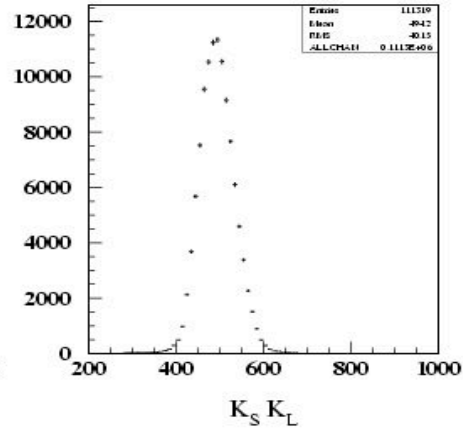
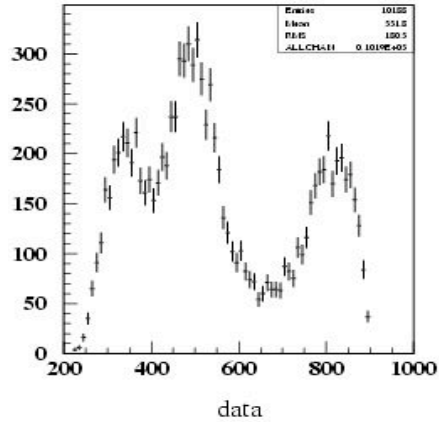


Study with $\eta \rightarrow 2\gamma$: resumé of the shapes



Study with $\eta \rightarrow 2\gamma$: numbers

	N_{MC}	N_{MC}^0	ϵ	σ (nb)	$n = \epsilon L \sigma$	$n/10188$
$K_S K_L$	111 319	19 887 800	5.6×10^{-3}	2.0	2682	0.26
$\eta \rightarrow 3\pi^0$	11 520	6 423 710	1.79×10^{-3}	0.33	142	0.014
$\omega\pi^0$	14 485	933 541	1.55×10^{-2}	0.55	2045	0.2
$f_0 \rightarrow 2\pi^0$	3 407	131 894	2.58×10^{-2}	0.17	1052	0.10
$a_0 \rightarrow \eta\pi^0$	442	97 205	4.55×10^{-3}	0.11	120	0.012
$e^+e^- \rightarrow \gamma\gamma$	155	80 601 500	1.92×10^{-5}	360	166	0.016
$\eta \rightarrow \gamma\gamma$	1 219	7 774 560	1.57×10^{-4}	0.39	15	0.0014

given so many processes, we decided to fit "altogether" with a Breit-Wigner shape describing the signal (CLEO mass and width)

Study with $\eta \rightarrow 2\gamma$: fit results

	fit fractions
$K_S K_L$	0.20867
$\eta \rightarrow 3\pi^0$	0.98000E-02
$\omega\pi^0$	0.23071
$f_0 \rightarrow 2\pi^0$	0.13390
$e^+e^- \rightarrow \gamma\gamma$	0.11200E-01
$a_0 \rightarrow \eta\pi^0$	0.15600E-01
$\eta \rightarrow \gamma\gamma$	0.18200E-02
signal	0.38740
10188 data events - $\chi^2/dof = 144.6/72$	

	fit fractions
$K_S K_L$	0.20879
$\eta \rightarrow 3\pi^0$	0.98000E-02
$\omega\pi^0$	0.23071
$f_0 \rightarrow 2\pi^0$	0.13390
$e^+e^- \rightarrow \gamma\gamma$	0.11200E-01
$a_0 \rightarrow \eta\pi^0$	0.15600E-01
$\eta \rightarrow \gamma\gamma$	without
signal	0.38776
10188 data events - $\chi^2/dof = 145.2/73$	

Study of the Ks mass scale and resolution

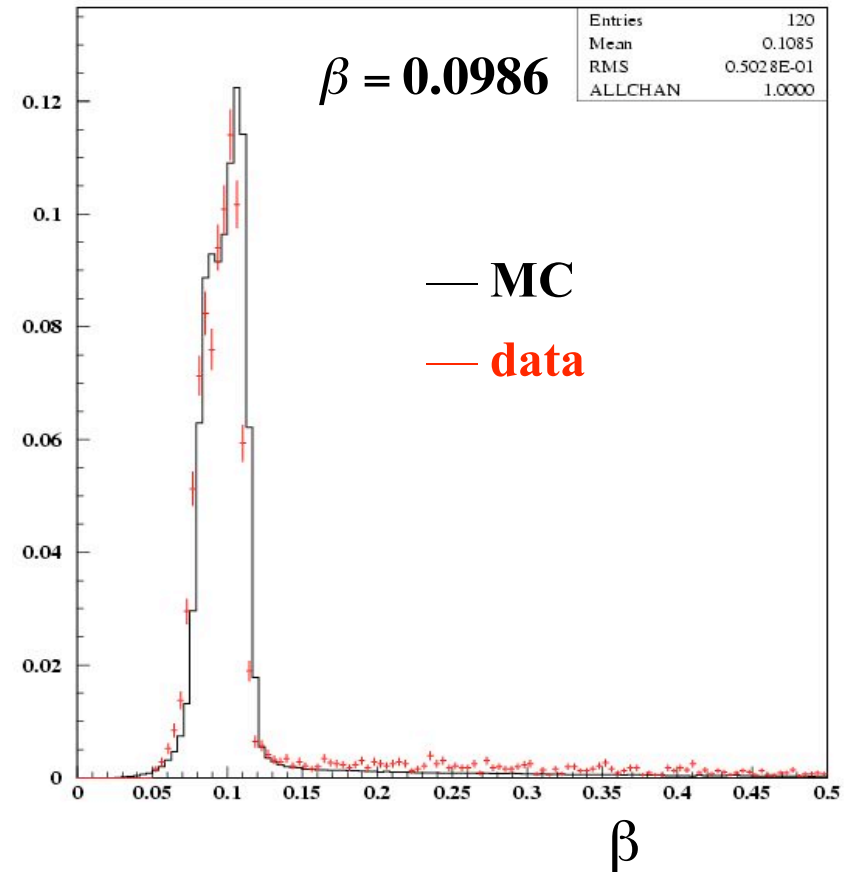
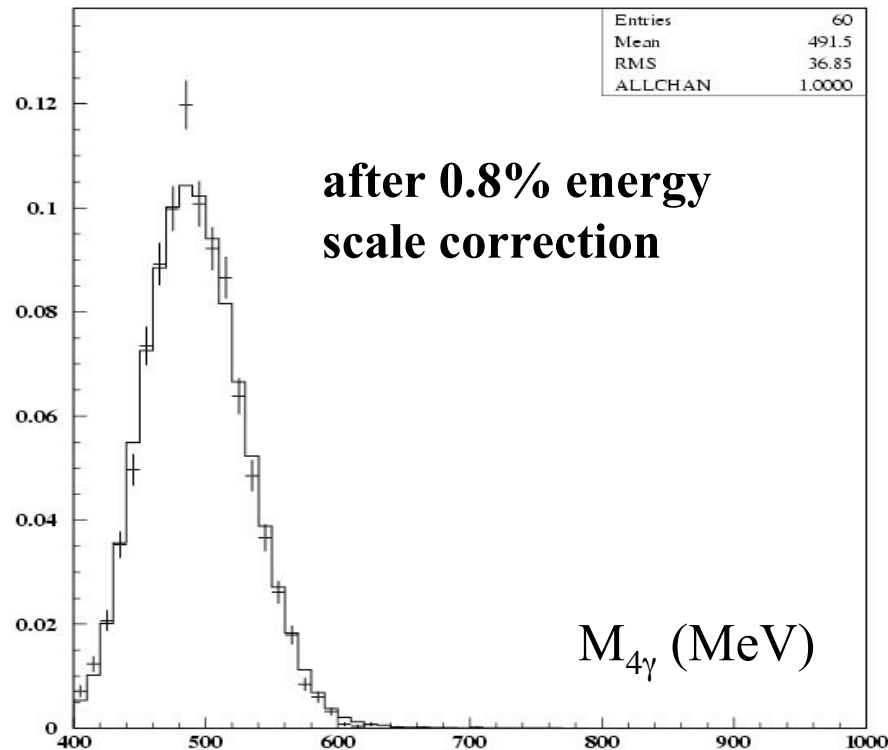
4 prompt neutral clusters

$$\chi^2 < 4$$

1 neutral non-prompt cluster
with

$$\beta < 0.5 \text{ and } E > 100 \text{ MeV}$$

no tracks

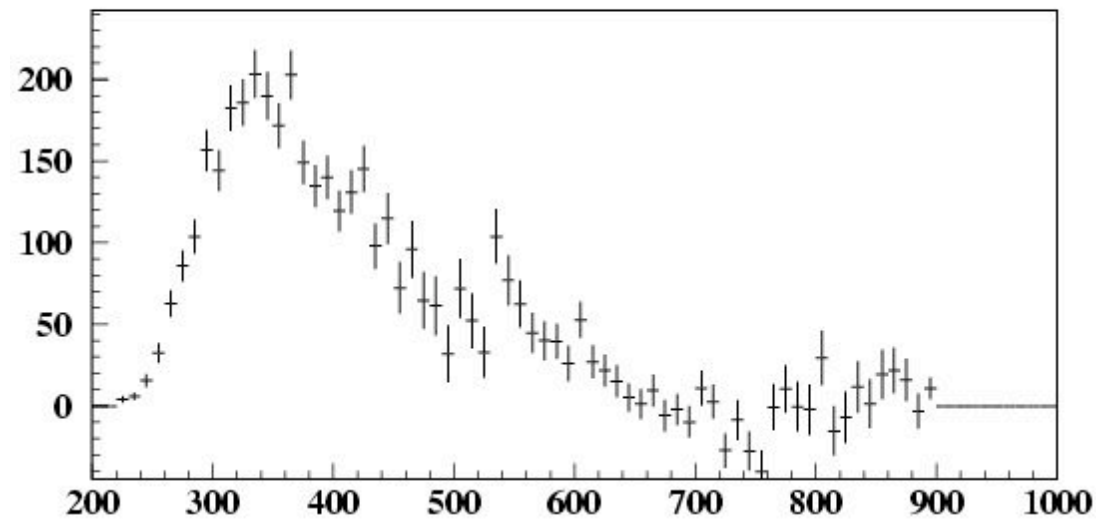
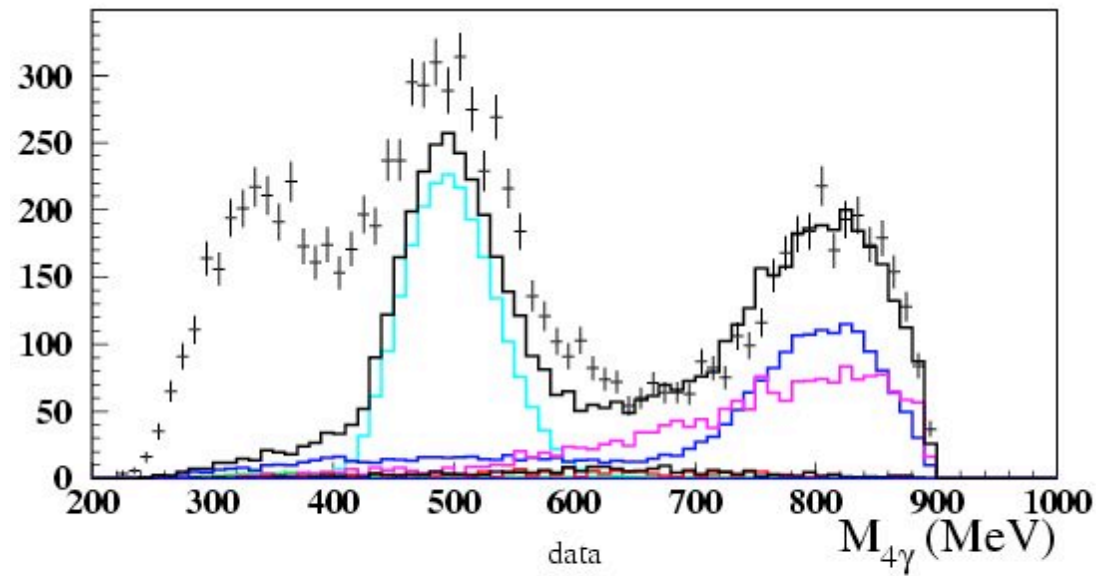


Results after K_S corrections

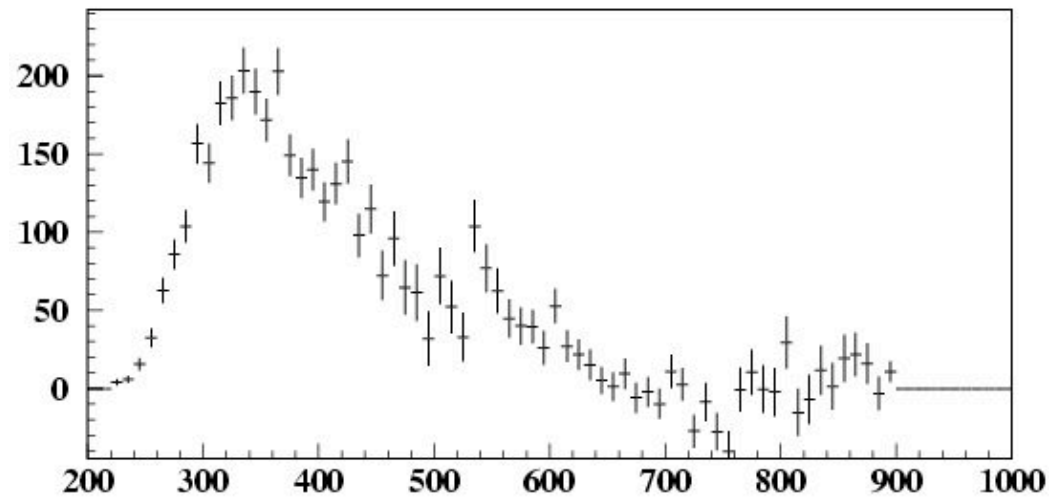
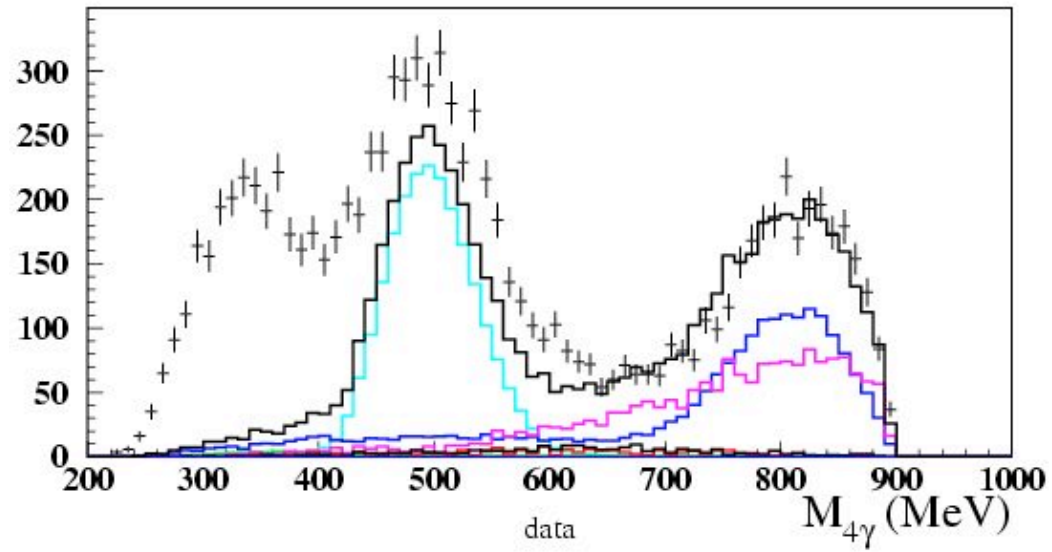
experiment	M (MeV)	Γ (MeV)
E791 [1]	478 ± 29	324 ± 46
CLEO [2]	513 ± 32	335 ± 67
BES [3]	541 ± 39	504 ± 84

10188 events	E791	CLEO	BES
$K_L K_S$	0.217	0.203	0.210
$\pi^0 \gamma$			
$\eta \gamma, \eta \rightarrow 3\pi^0$	0.007	0.007	0.007
$\eta \gamma, \eta \rightarrow \gamma \gamma$			
$\omega \pi^0, \omega \rightarrow \pi^0 \gamma$	0.237	0.195	0.201
$f_0 \gamma$	0.174	0.174	0.167
$a_0 \gamma$	0.020	0.020	0.011
$\eta' \gamma$			
$e^+ e^- \rightarrow \gamma \gamma$	0.015	0.015	0.008
$\sigma \rightarrow \pi^0 \pi^0$	0.366	0.385	0.396
χ^2/ndf	149/73	139/73	124/73

Fit result: E791



Fit result: CLEO



Fit result: BES

