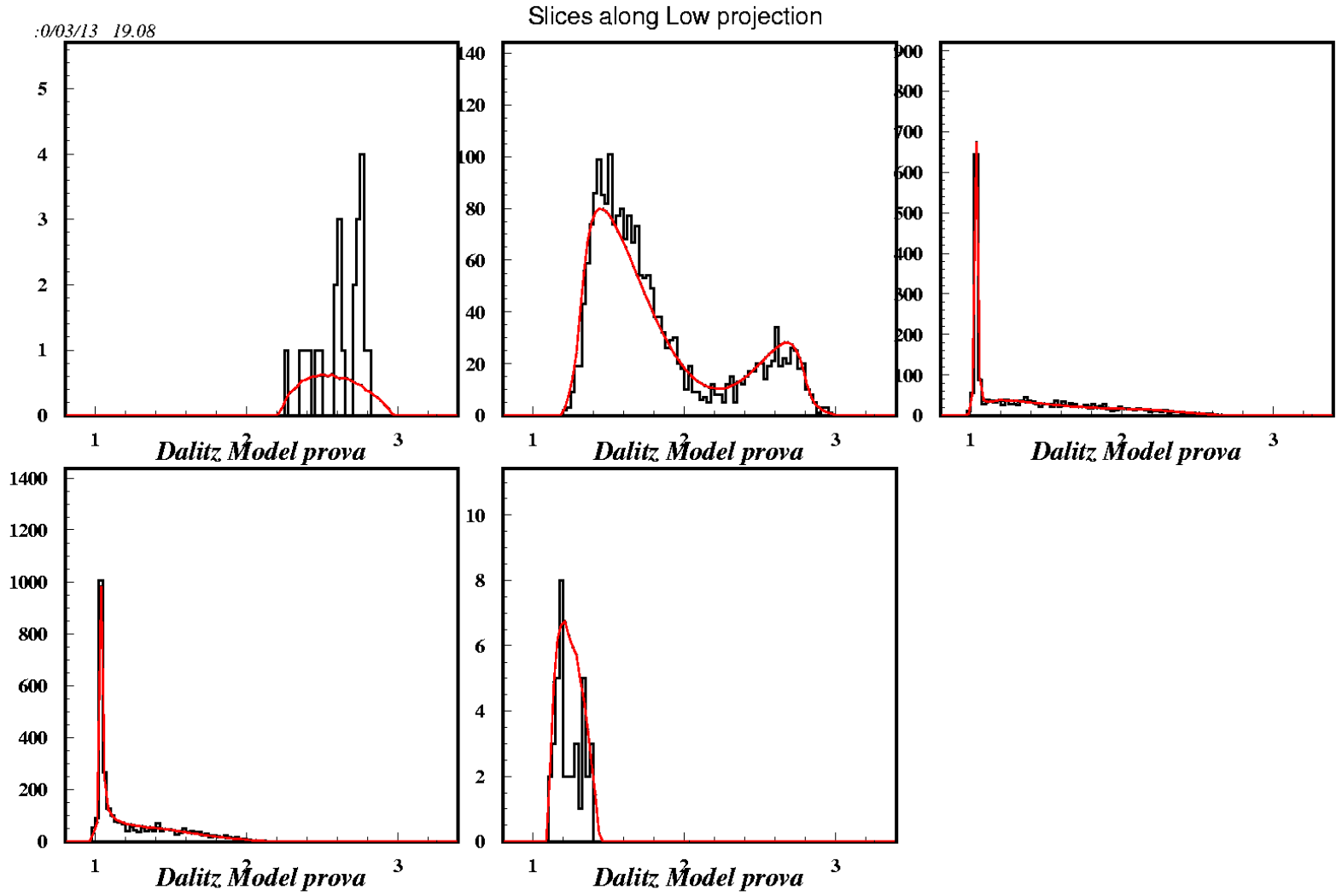
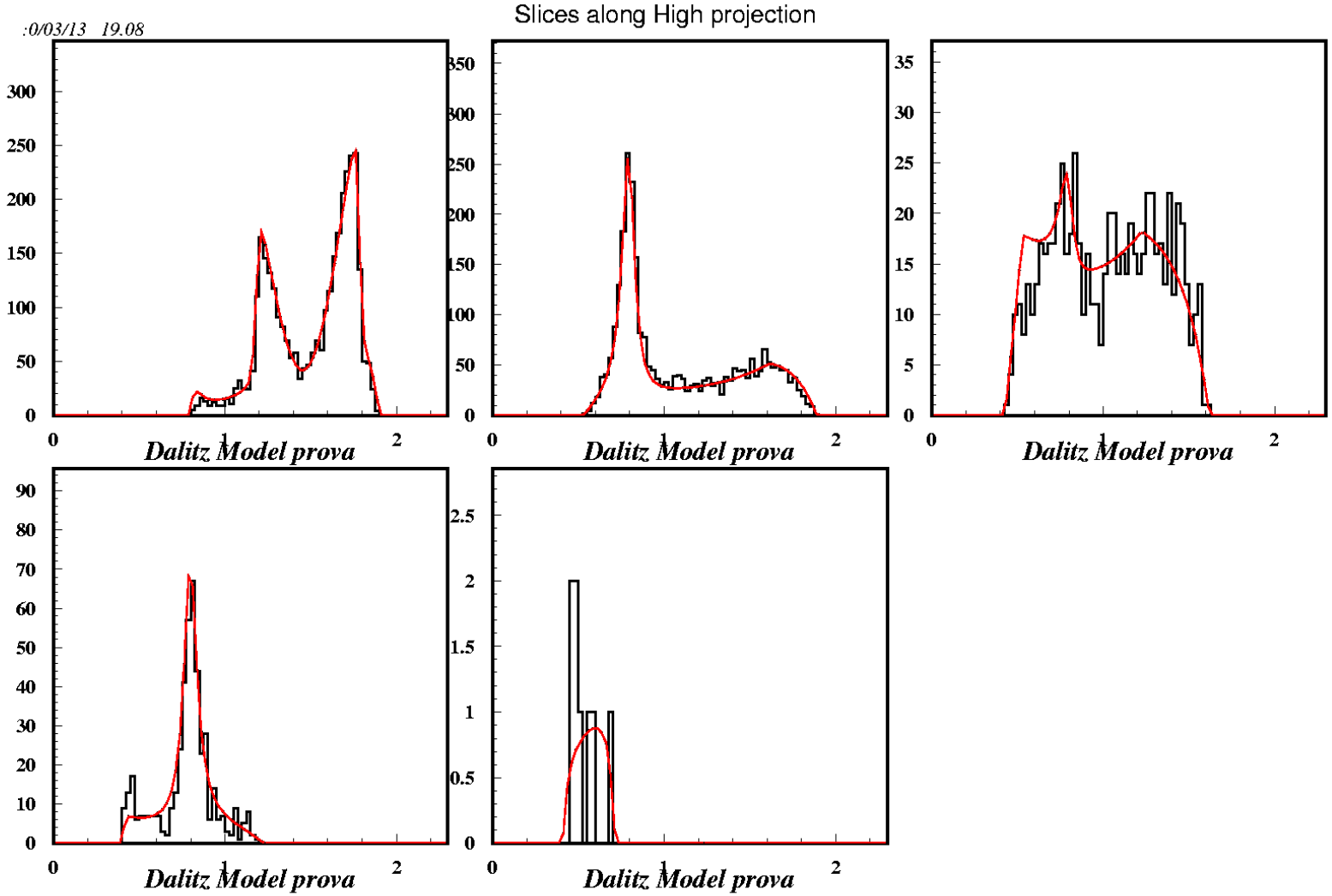
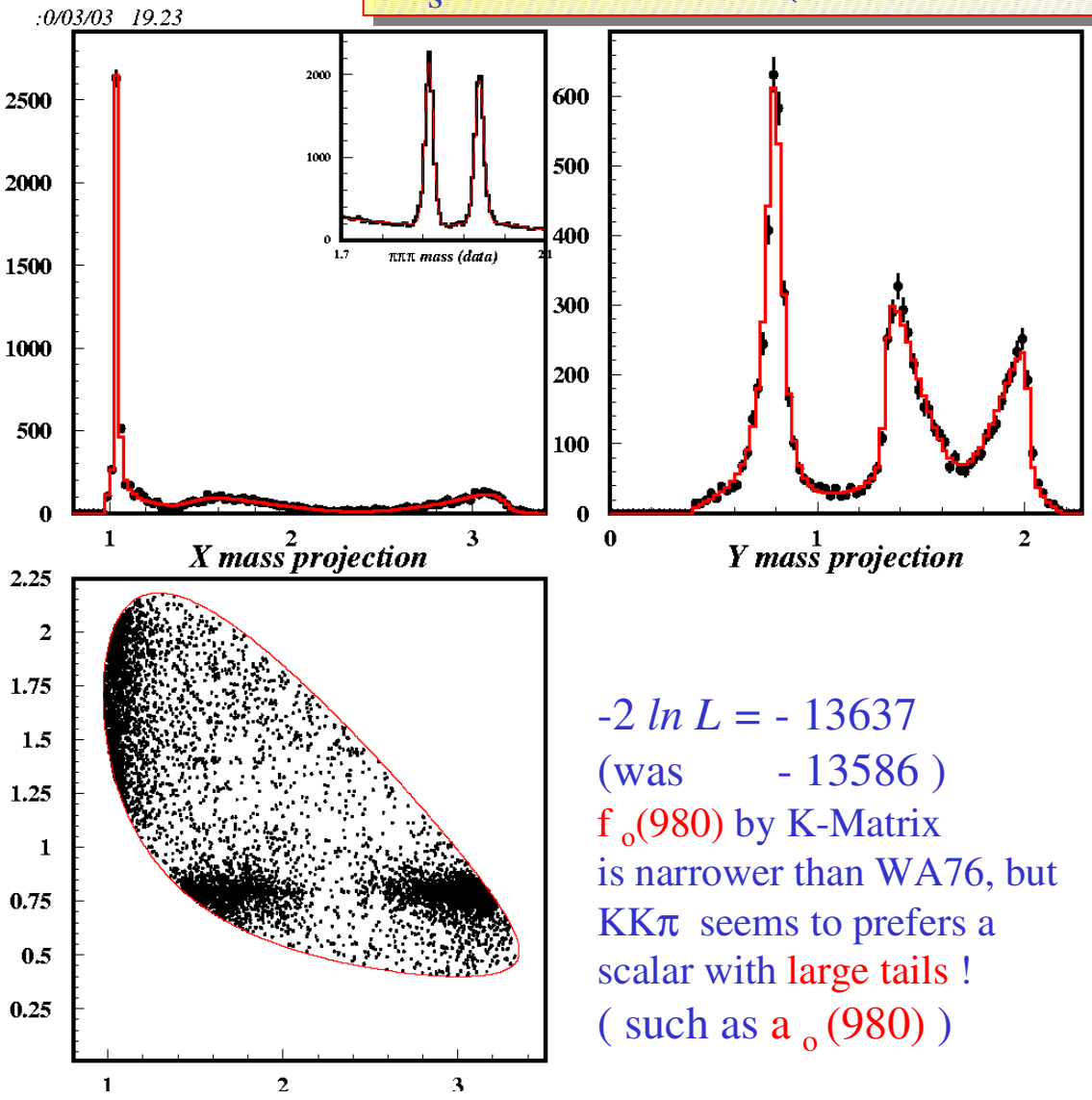

:0/03/13 19.08
Slices along Low projection
Dalitz Model prova
Dalitz Model prova
Dalitz Model prova
Dalitz Model prova
Dalitz Model prova


:0/03/13 19.08
Slices along High projection
Dalitz Model prova
Dalitz Model prova
Dalitz Model prova
Dalitz Model prova
Dalitz Model prova

$D_s^+ \rightarrow K^-K^+\pi^+$ (**100%** of the full sample)



-2 *ln L* = - 13637
(was - 13586)
$f_o(980)$ by K-Matrix
is narrower than WA76, but
$KK\pi$ seems to prefers a
scalar with large tails !
(such as $a_o(980)$)

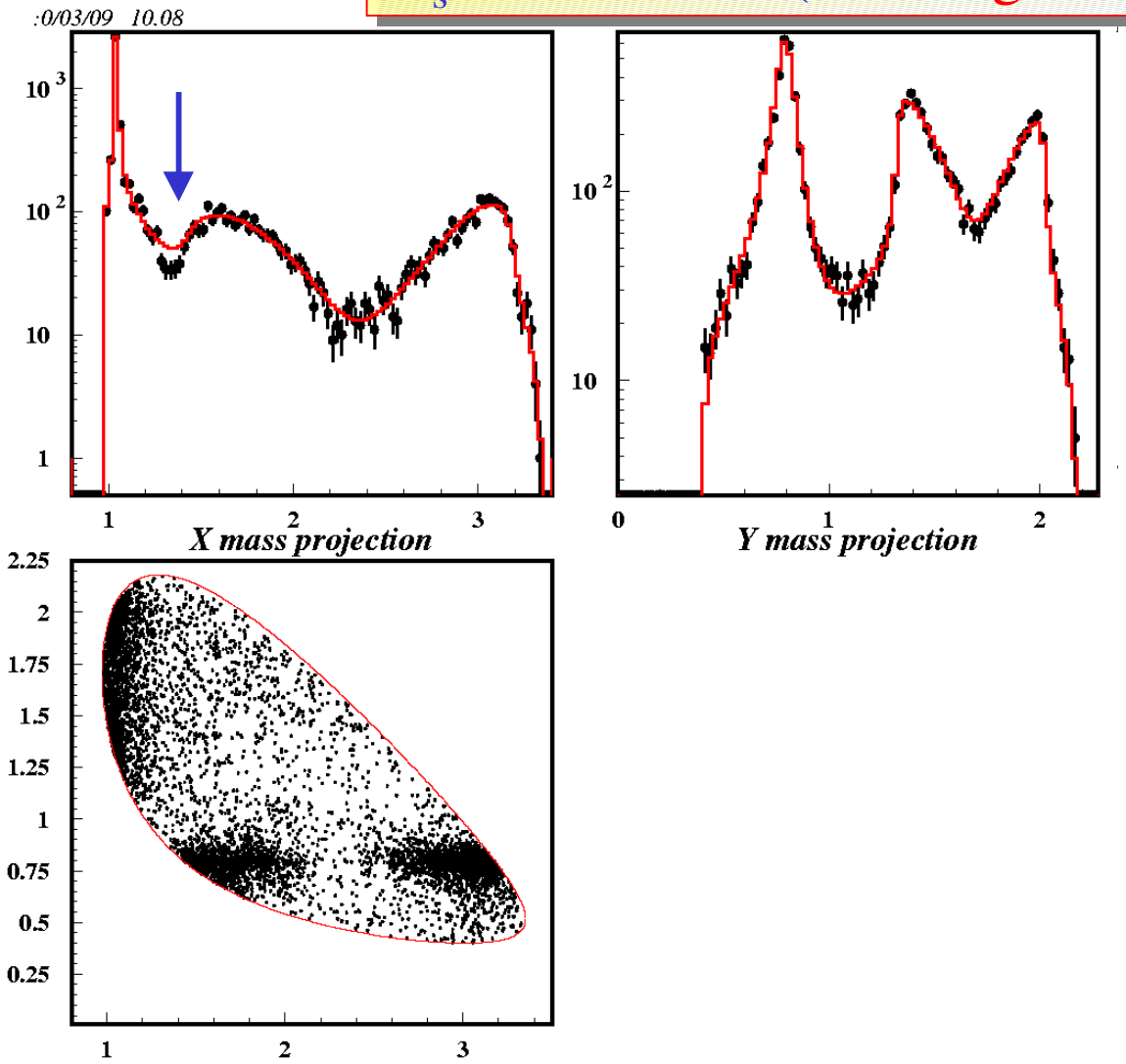
Fit results

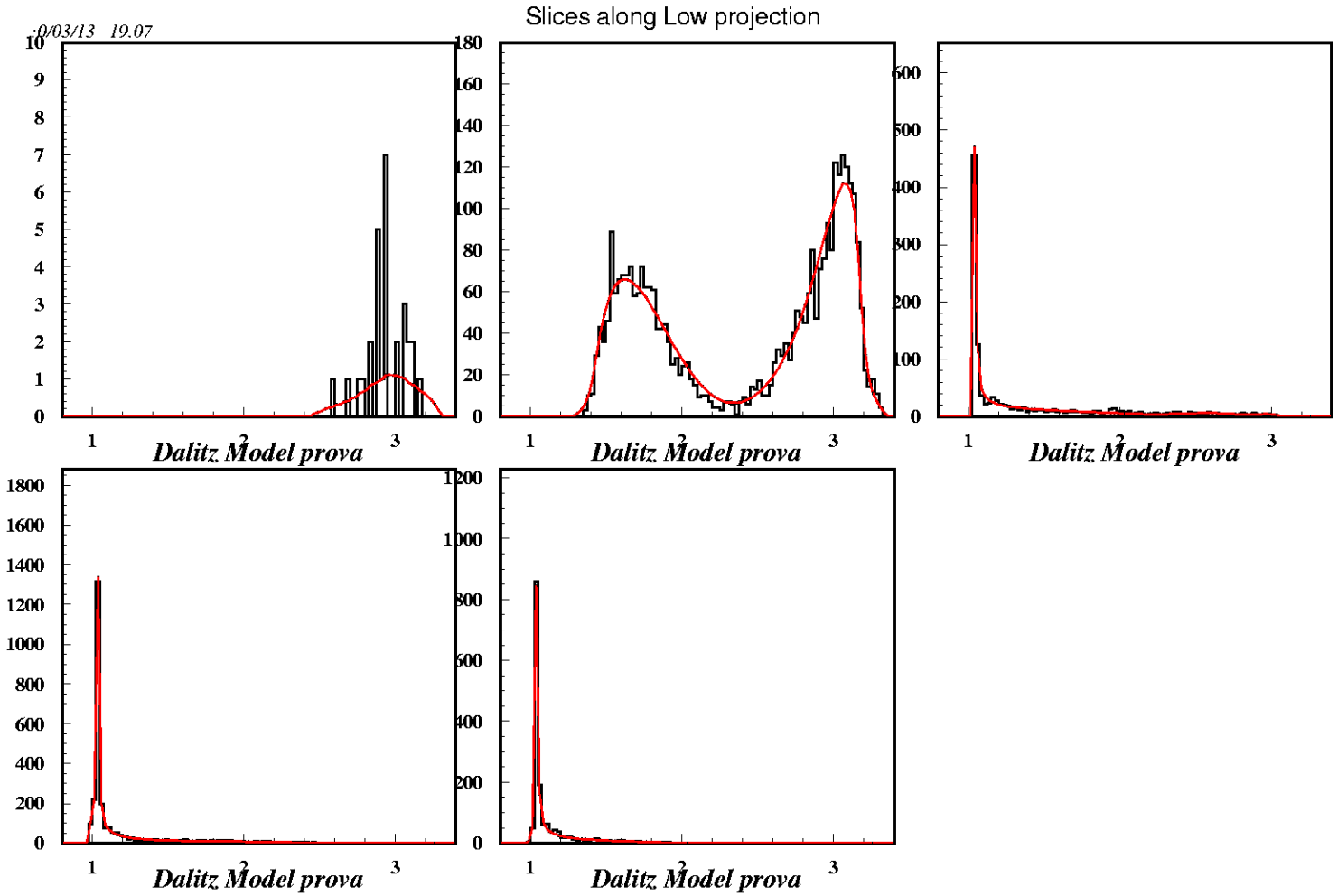
	Fit frac.	Phase (Deg)
K^{*0} (892)	0.44 ± 0.02	0.0 (fixed)
ϕ (1020)	0.45 ± 0.02	140 ± 4
f_0 (980)	0.04 ± 0.03	241 ± 28
K^*_0 (1430)	0.10 ± 0.01	116 ±8
f_j (1710)	0.03 ± 0.01	109 ± 6
a_0 (980)	0.25 ± 0.06	114 ± 12

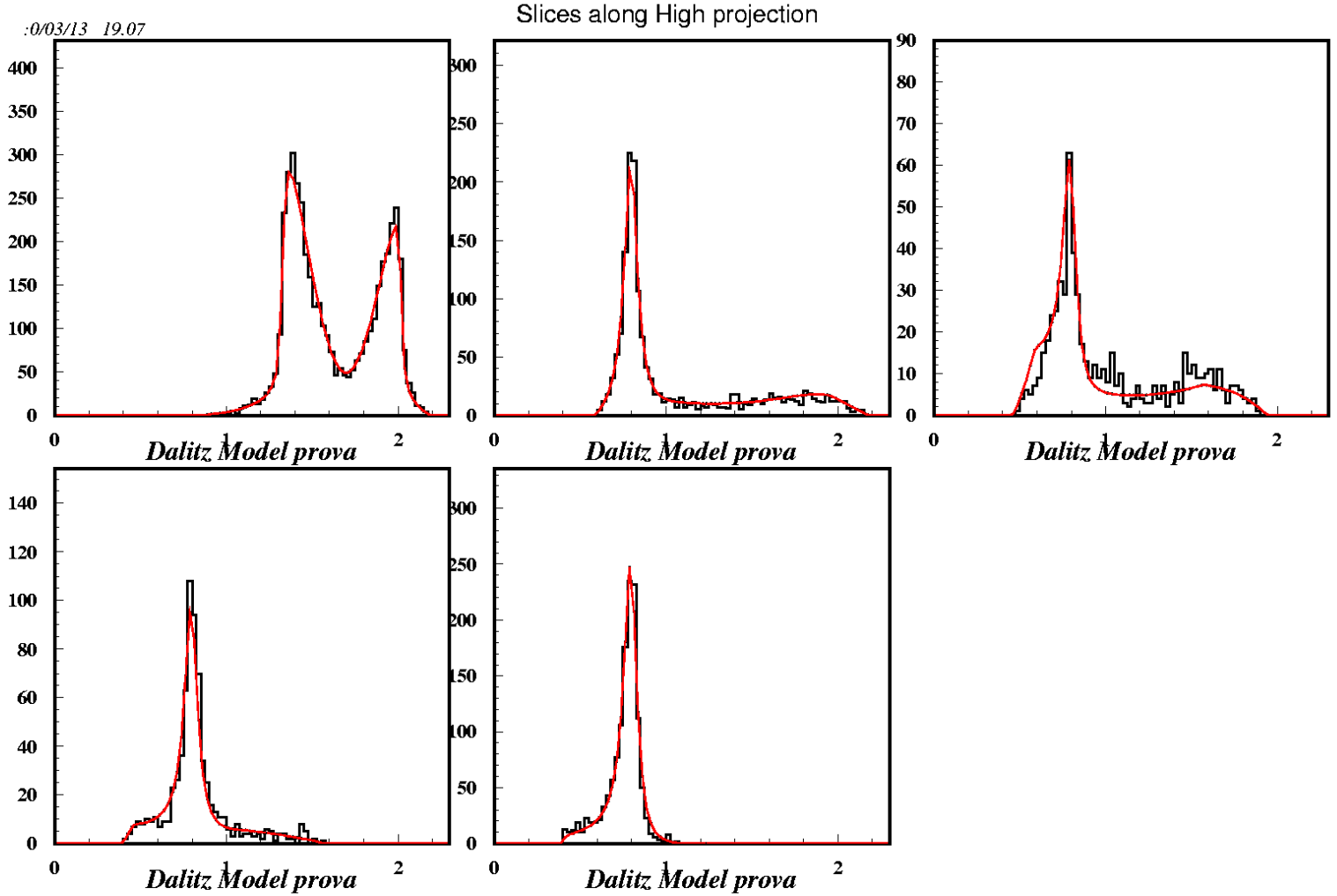
E687 published result

	Fit frac.	Phase (Deg)
K^{*0} (892)	0.48 ± 0.05	0.0 (fixed)
K^*_0 (1430)	0.09 ± 0.03	152 ± 40
ϕ (1020)	0.40 ± 0.03	178 ± 20
f_0 (980)	0.11 ± 0.04	159 ± 22
f_j (1710)	0.03 ± 0.02	110 ± 20

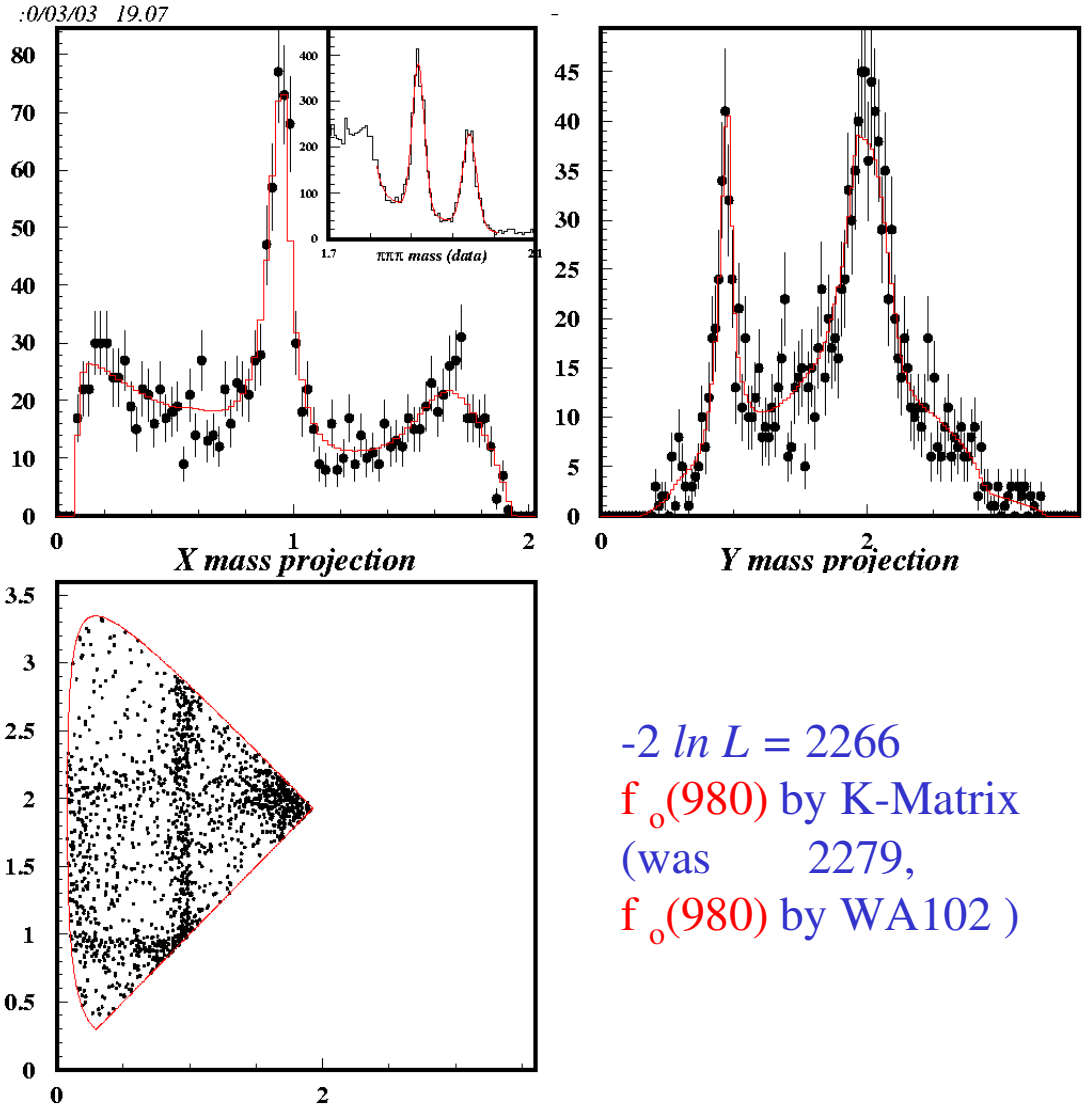
$D_s^+ \rightarrow K^-K^+\pi^+$ (semi log. scale)




Slices along Low projection
:0/03/13 19.07
Dalitz Model prova
m²
Dalitz Model prova
m²
Dalitz Model prova
m²
Dalitz Model prova
m²
Dalitz Model prova
m²


Slices along High projection
:0/03/13 19.07
Dalitz Model prova
Dalitz Model prova
Dalitz Model prova
Dalitz Model prova
Dalitz Model prova

$D_s^+ \rightarrow \pi^-\pi^+\pi^+$ Dalitz Plot from E831 Data (**100%** of the full sample)



-2 *ln L* = 2266
$f_o(980)$ by K-Matrix
(was 2279,
$f_o(980)$ by WA102)

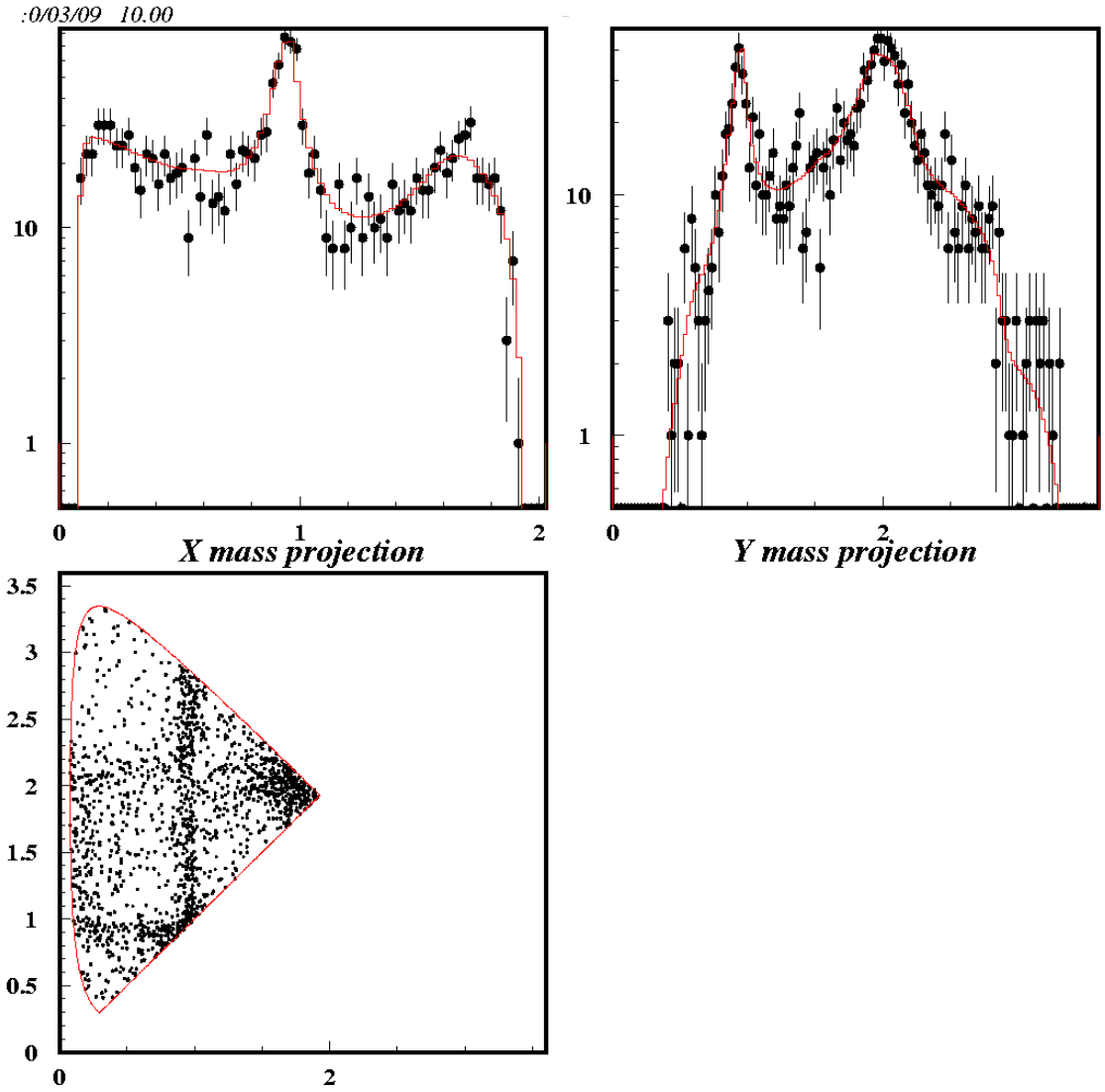
Fit results

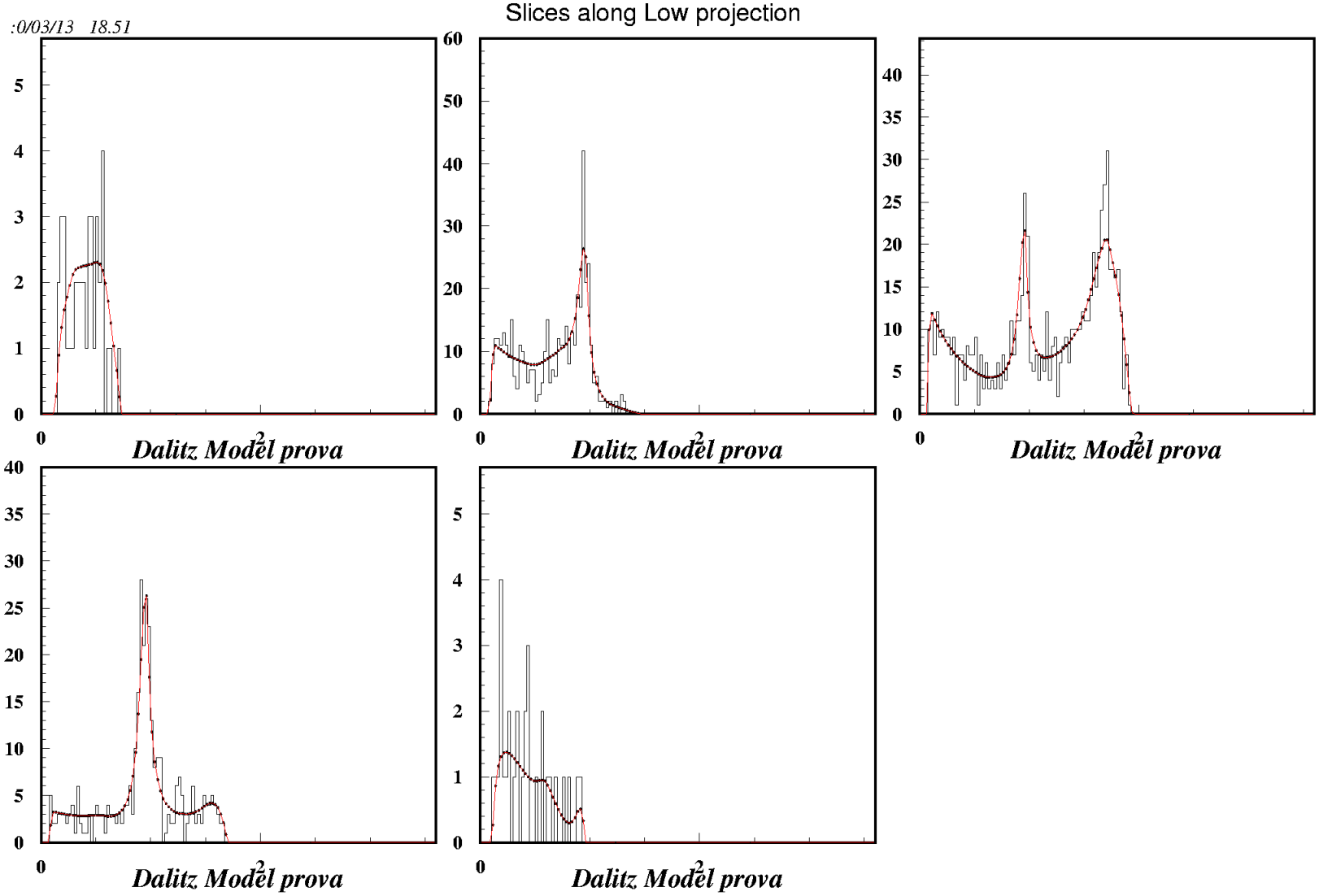
	Fit frac.	Phase
NR	0.20 ± 0.04	233 ± 7
ρ (770)	0.02 ± 0.01	39 ± 40
f_2 (1270)	0.09 ± 0.01	152 ± 8
f_0 (980)	0.83 ± 0.04	0 (fixed)
S_0 (1475)	0.24 ± 0.04	254 ± 6
ρ (1450)	0.04 ± 0.01	210 ± 2

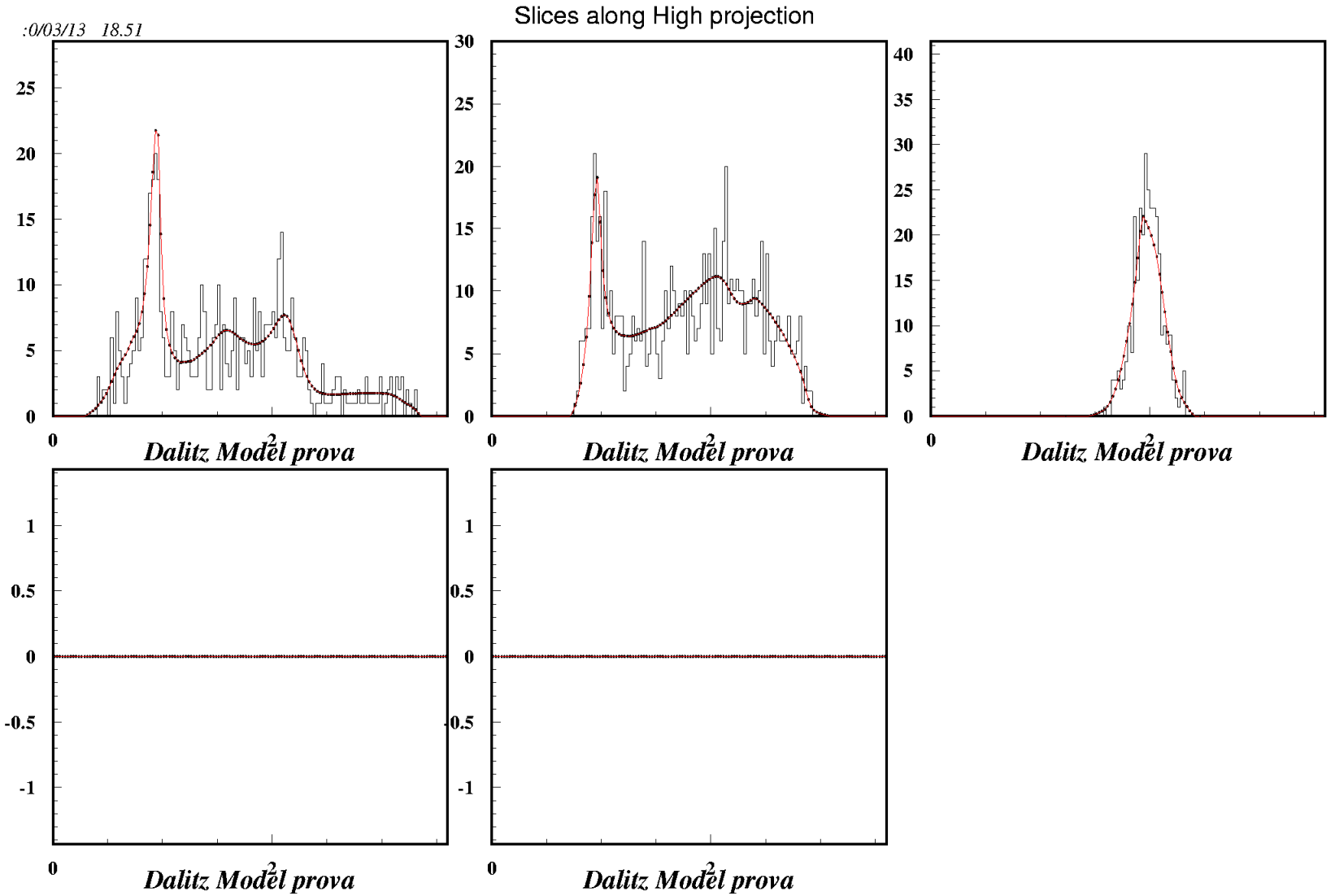
E687 published result

	Fit frac.	Phase
NR	0.12 ± 0.12	235 ± 22
ρ (770)	0.02 ± 0.03	53 ± 44
f_2 (1270)	0.12 ± 0.06	100 ± 18
f_0 (980)	1.07 ± 0.14	0 (fixed)
S_0 (1475)	0.27 ± 0.11	234 ± 15

$D_s^+ \rightarrow \pi^-\pi^+\pi^+$ Dalitz Plot from E831 Data (semi log. scale)

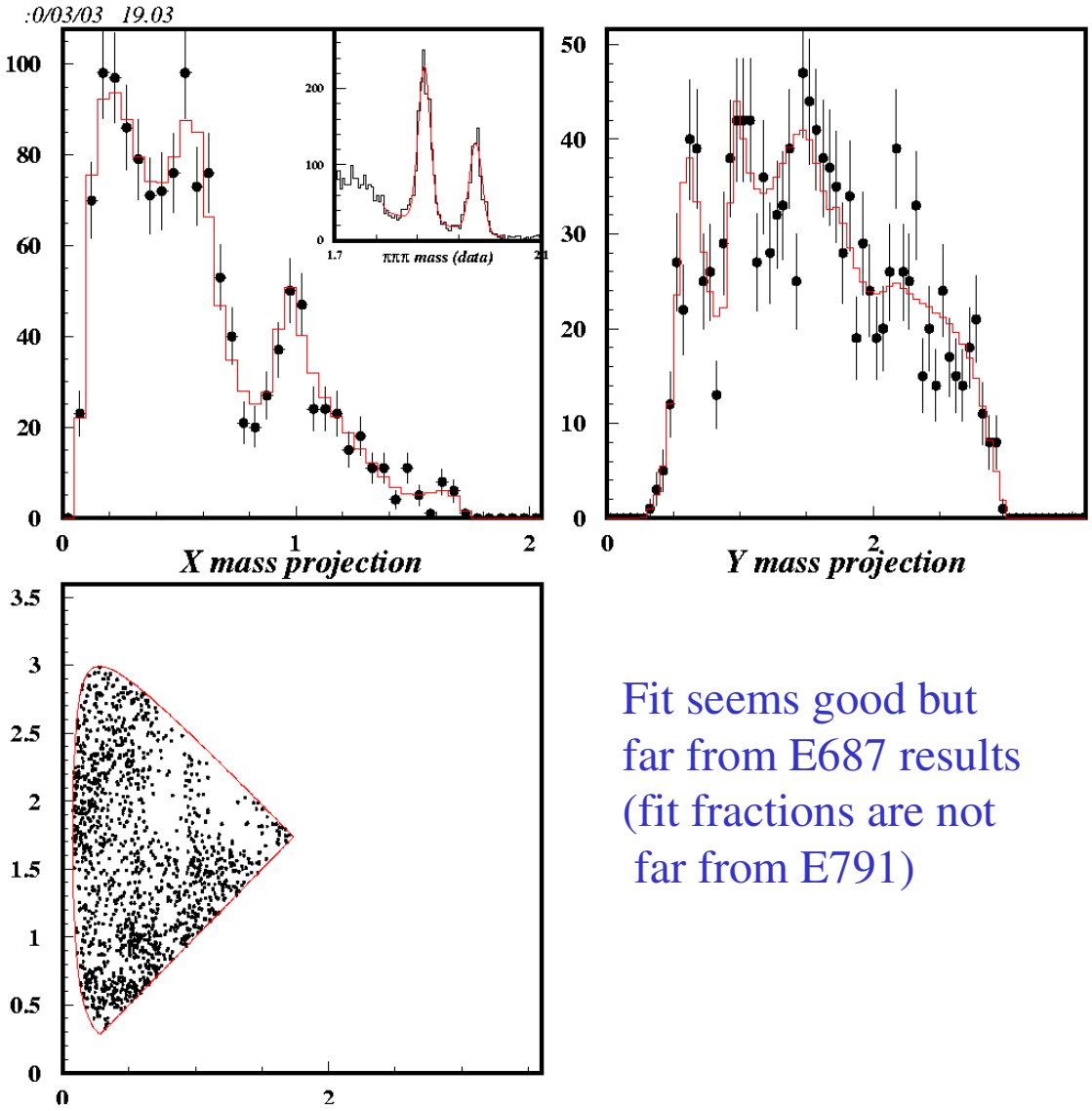



:0/03/13 18.51
Slices along Low projection
Dalitz Model prova
m^2
Dalitz Model prova
m^2
Dalitz Model prova
m^2
Dalitz Model prova
m^2
Dalitz Model prova
m^2


Slices along High projection
:0/03/13 18.51
Dalitz Model prova
Dalitz Model prova
Dalitz Model prova
Dalitz Model prova
Dalitz Model prova

$D^+ \rightarrow \pi^-\pi^+\pi^+$ Dalitz Plot from E831 Data (**100%** of the full sample)

NEW!



Fit seems good but far from E687 results (fit fractions are not far from E791)

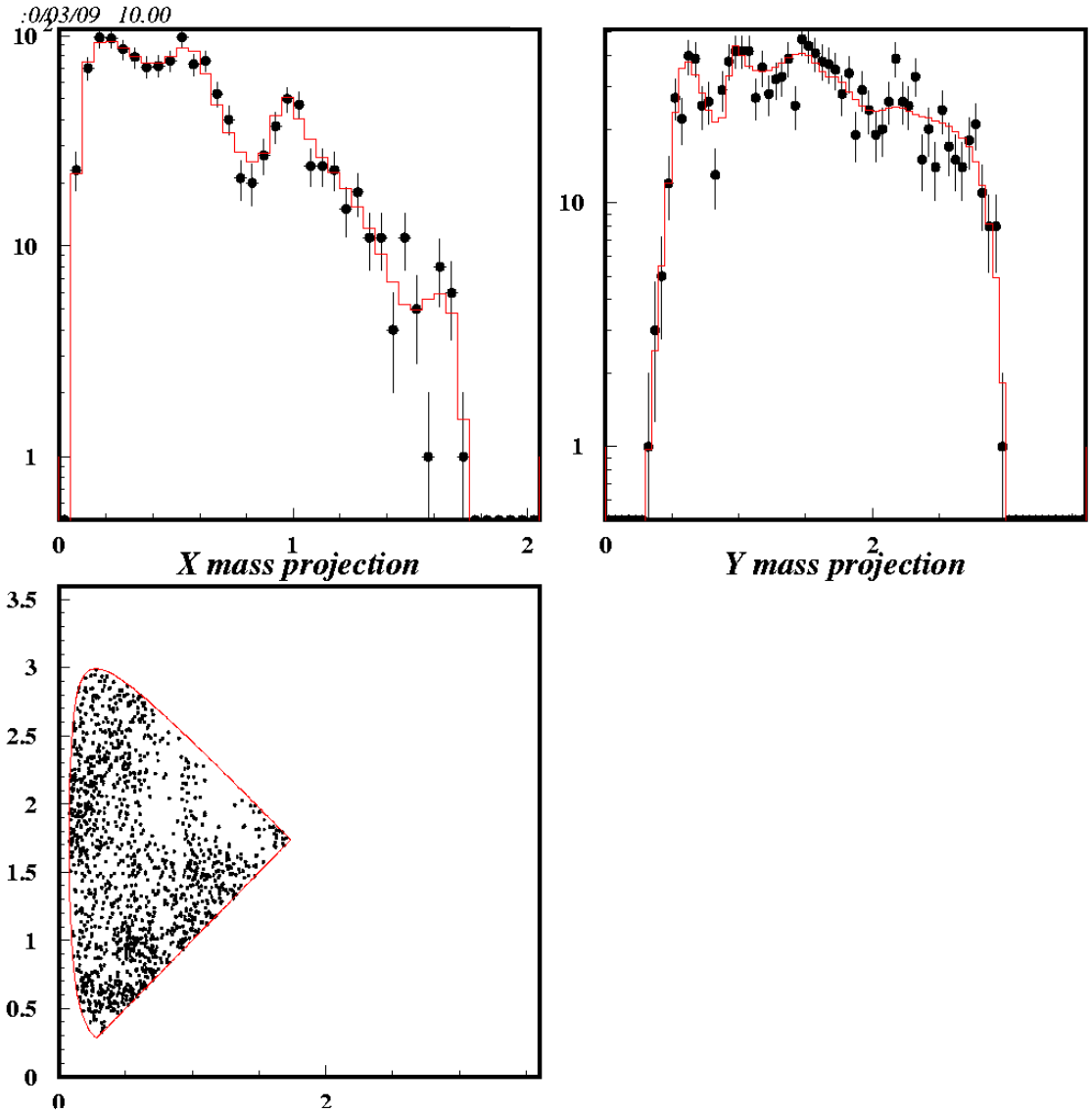
Fit results

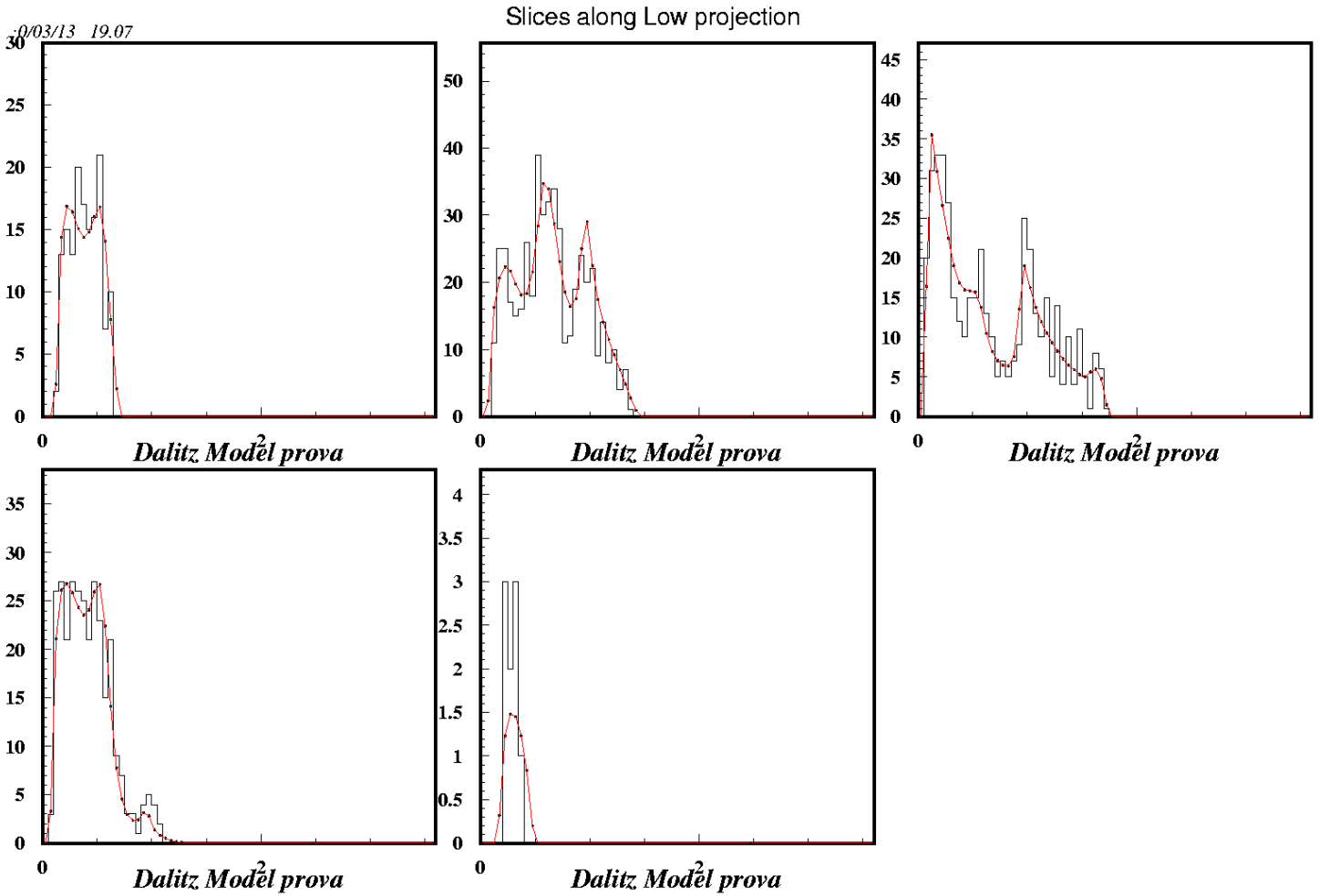
	Fit frac.	Phase
NR	0.10 ± 0.08	0 (fixed)
ρ (770)	0.34 ± 0.04	84 ± 14
f_2 (1270)	0.11 ± 0.02	171 ± 15
f_0 (980)	0.06 ± 0.02	238 ± 21
S_0 (1475)	0.01 ± 0.01	273 ± 34
ρ (1450)	0.04 ± 0.01	0 ± 30
f_0 (400)	0.26 ± 0.01	-64 ± 16
f_0 (1300)	0.01 ± 0.01	-19 ± 80

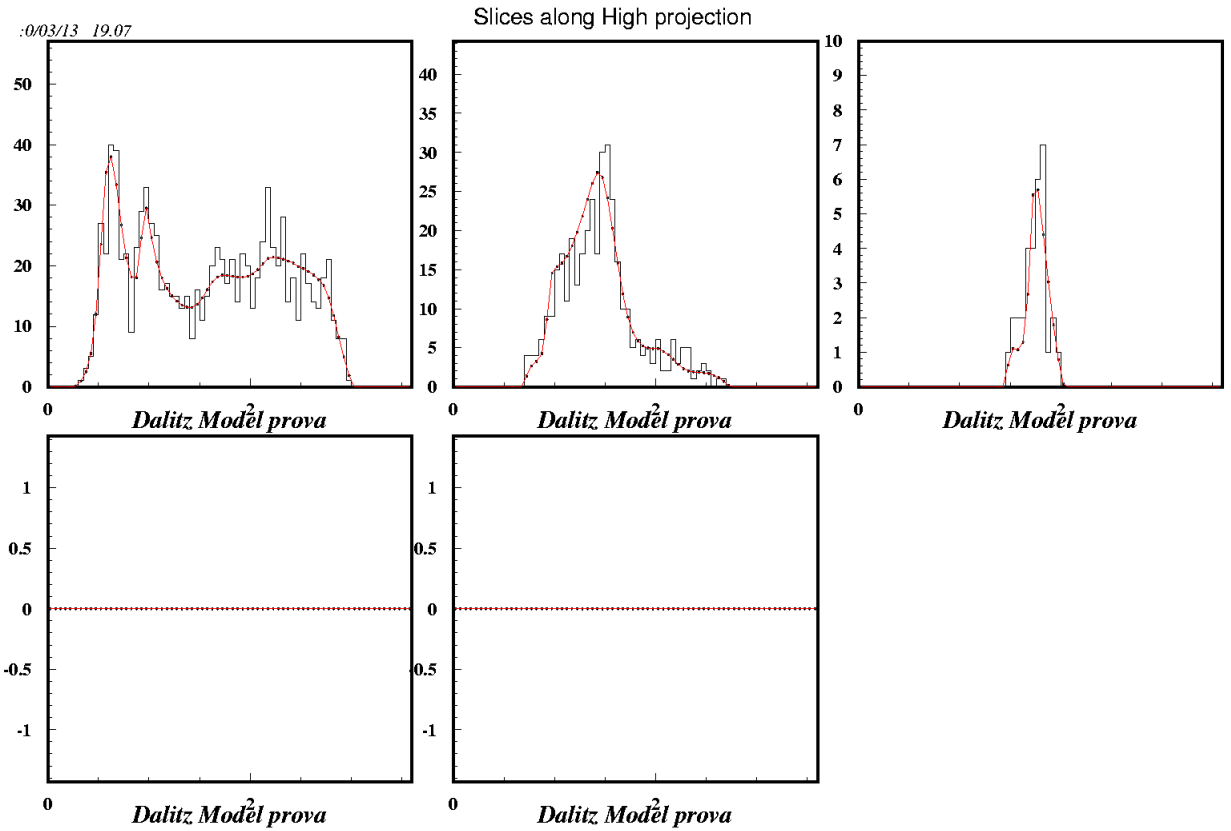
E687 published result

	Fit frac.	Phase
NR	0.59 ± 0.11	0 (fixed)
ρ (770)	0.29 ± 0.06	27 ± 14
f_2 (1270)	0.05 ± 0.03	207 ± 17
f_0 (980)	0.03 ± 0.03	197 ± 28

$D^+ \rightarrow \pi^-\pi^+\pi^+$ Dalitz Plot from E831 Data (semi log. scale)

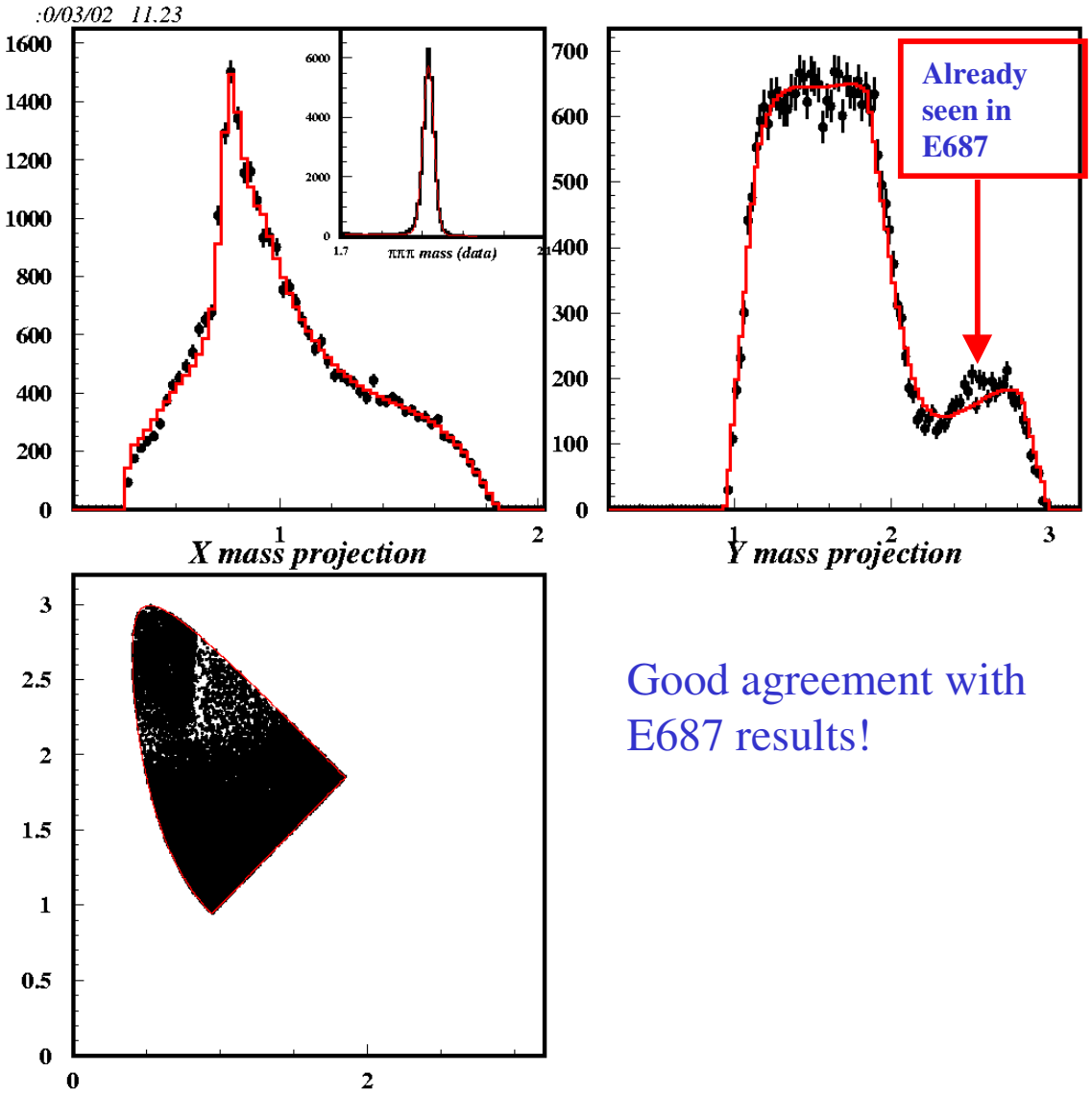



Slices along Low projection
:0/03/13 19.07
Dalitz Model prova
Dalitz Model prova
Dalitz Model prova
Dalitz Model prova
Dalitz Model prova


:0/03/13 19.07
Slices along High projection
Dalitz Model prova
Dalitz Model prova
Dalitz Model prova
Dalitz Model prova
Dalitz Model prova

$D^+ \rightarrow K^- \pi^+ \pi^+$ (**100%** of the full sample)

NEW!



Good agreement with E687 results!

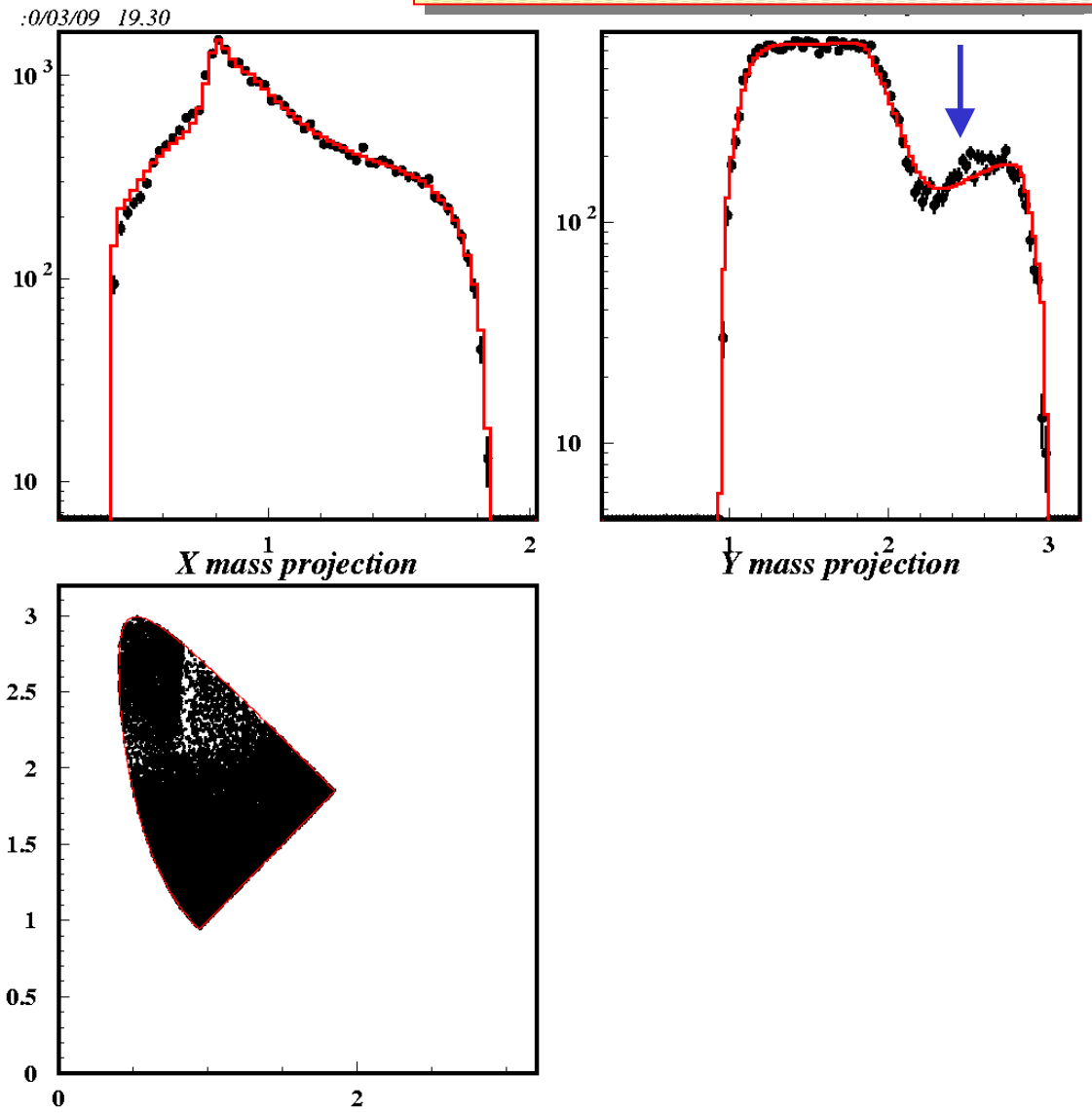
Fit results

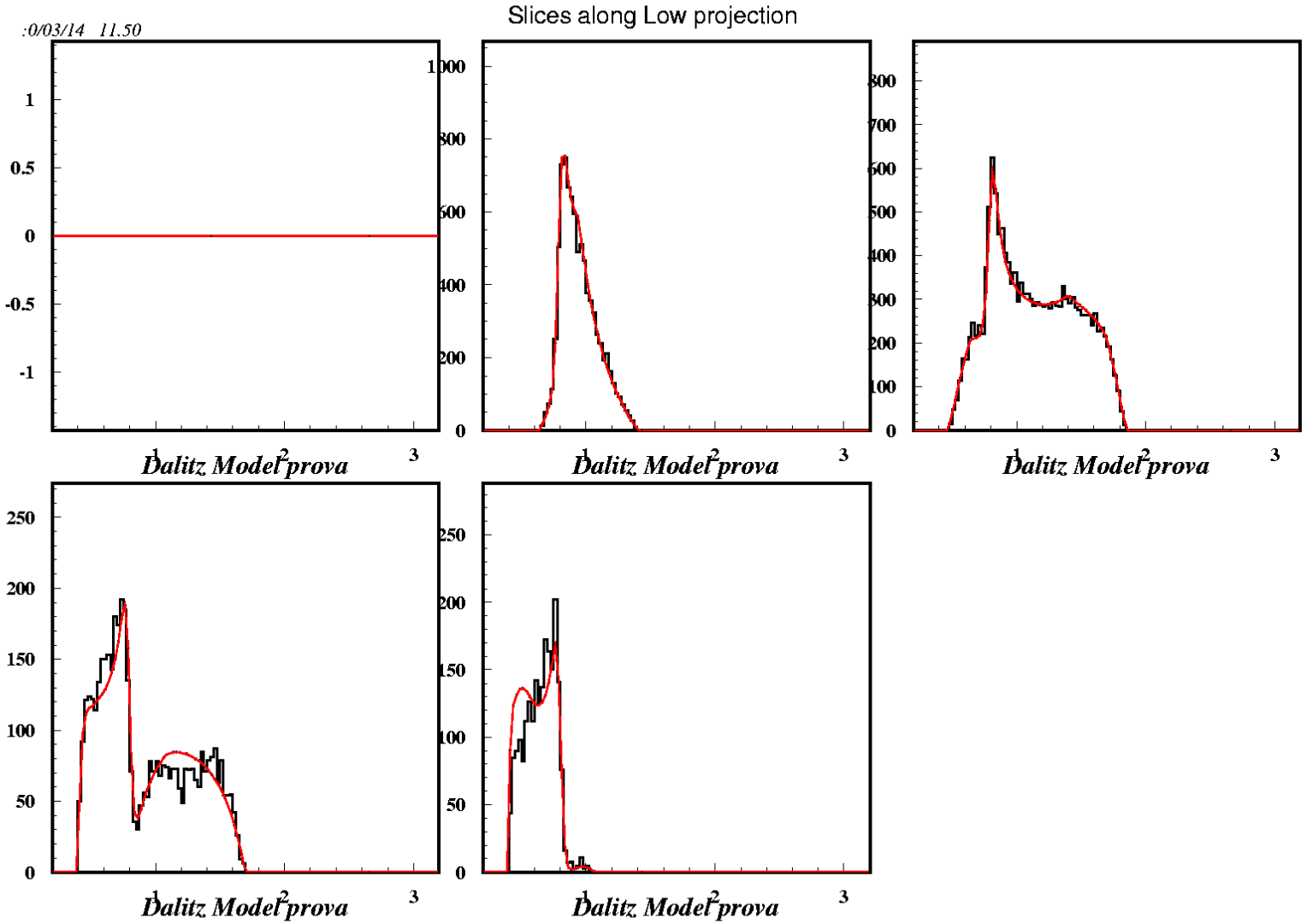
	Fit frac.	Phase (Deg)
NR	0.96 ± 0.02	0.0 (fixed)
K^{*0} (892)	0.12 ± 0.01	50 ±1
K^*_0 (1430)	0.30 ± 0.01	58 ±1
K^*_0 (1680)	0.03 ± 0.01	70 ±1
K^*_1 (1410)	0.01 ± 0.01	-44 ±16
K^*_2 (1430)	0.01 ± 0.01	37 ±1

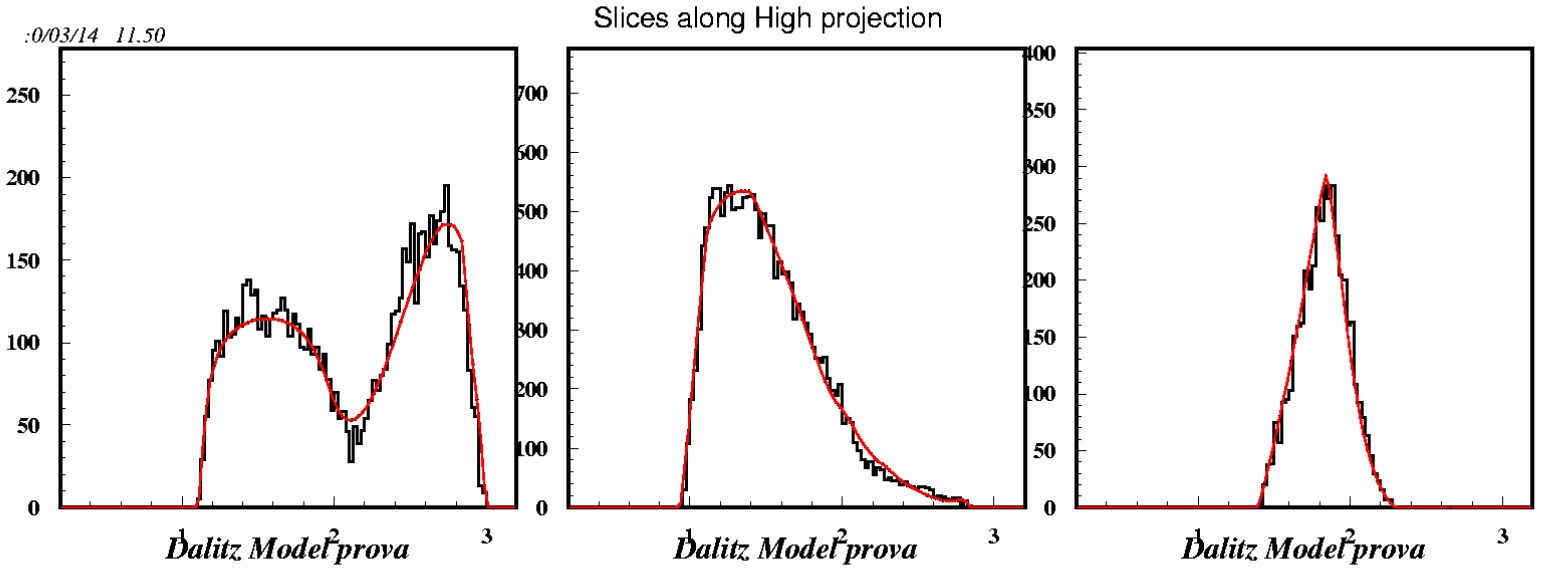
E687 published result

	Fit frac.	Phase (Deg)
NR	1.00 ± 0.02	0.0 (fixed)
K^{*0} (892)	0.14 ± 0.01	48 ±2
K^*_0 (1430)	0.28 ± 0.01	63 ±2
K^*_0 (1680)	0.05 ± 0.01	73 ±4

$D^+ \to K^- \pi^+ \pi^+$ (**100%** of the full sample)




Slices along Low projection
:0/03/14 11.50
Dalitz Model prova
Dalitz Model prova
Dalitz Model prova
Dalitz Model prova
Dalitz Model prova


Slices along High projection
:0/03/14 11.50
250
200
150
100
50
0
700
600
500
400
300
200
100
0
400
350
300
250
200
150
100
50
0
1
2
3
Dalitz Model prova
Dalitz Model prova
Dalitz Model prova

Conclusions

A new approach to the coupled scalar description (K-Matrix).

- This allow us to model $f_o(980)$ on our data in a proper way (unitarity conservation) trough the Likelihood scan method
- We can obtain an improvement in $-2ln\,L$ $D_s^+ \longrightarrow \pi^-\pi^+\pi^+$ using this model
- $D_s^+ \longrightarrow K^-K^+\pi^+$ seems to prefer a scalar with large tails ($a_0(980)$?) instead of the $f_o(980)$ obtained by K-Matrix.
  The scan method performed on this decay do not give us any information (no minimum) for $f_o(980)$

Now we can work with a most general approach to Dalitz Plot analyses:

- Arbitrary numbers of amplitudes for the model and bckg (the only limit is the MINUIT numbers of parameters)
- It allow us to parameterized the bckg in a proper way.
- Extension to D_0 should be trivial.
- New Dalitz Plot analysis has been preliminary studied ($D^+ \longrightarrow \pi^-\pi^+\pi^+$ and $D^+ \longrightarrow K^-\pi^+\pi^+$)