

1. Fit for $F_+(hh\pi^0)$

The fit was done on the data emailed by Chris:

bin	PiPiPi0 vs KsPiPi	PiPiPi0 vs KlPiPi	KKPi0 vs KsPiPi	KKPi0 vs KlPiPi
1	201.4 ± 37.0	377.8 ± 45.9	81.3 ± 23.9	86.8 ± 24.2
2	117.0 ± 29.0	142.2 ± 28.3	28.4 ± 14.7	38.6 ± 16.7
3	162.9 ± 31.0	138.9 ± 29.2	40.1 ± 16.1	15.2 ± 14.3
4	114.4 ± 26.1	29.8 ± 15.6	10.9 ± 8.4	2.7 ± 7.9
5	573.9 ± 60.9	24.3 ± 20.8	47.1 ± 19.5	-2.7 ± 16.2
6	183.1 ± 34.7	55.7 ± 19.6	26.6 ± 13.8	38.1 ± 15.9
7	206.2 ± 37.3	197.1 ± 32.1	46.4 ± 18.0	75.7 ± 20.7
8	196.4 ± 35.6	277.6 ± 39.1	38.7 ± 16.5	87.2 ± 22.5

Table 1.1: $M_i + M_{-i}$ for $hh\pi^0$ vs $K_S^0\pi\pi$ and $K_L^0\pi\pi$.

1.1 $\pi\pi\pi^0$

	$\pi\pi\pi^0$ vs $K_S^0\pi\pi$	$\pi\pi\pi^0$ vs $K_L^0\pi\pi$	simultaneous
F_+	1.001 ± 0.054	0.992 ± 0.081	0.999 ± 0.045
$h_{K_S^0\pi\pi}$	933.471 ± 61.130	—	933.636 ± 60.656
$h_{K_L^0\pi\pi}$	—	497.190 ± 44.564	494.871 ± 48.840
χ_{ndof}^2	0.422	0.232	0.330

Table 1.2: Results of the fit for F_+ in $\pi\pi\pi^0$.

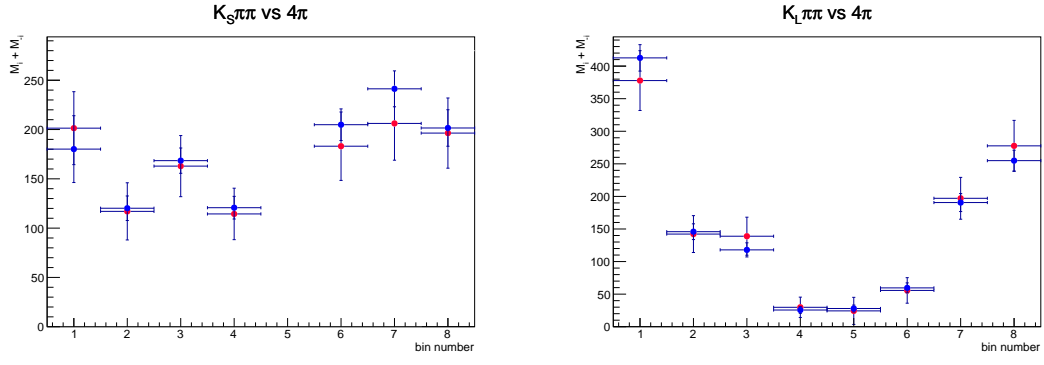


Figure 1.1: Distribution of MM over the bins for $\pi\pi\pi^0$ vs $K_S^0\pi\pi$ (left) and $\pi\pi\pi^0$ vs $K_L^0\pi\pi$ (right). The fit was performed on both modes independently of each other. Red: data, blue: fit values.

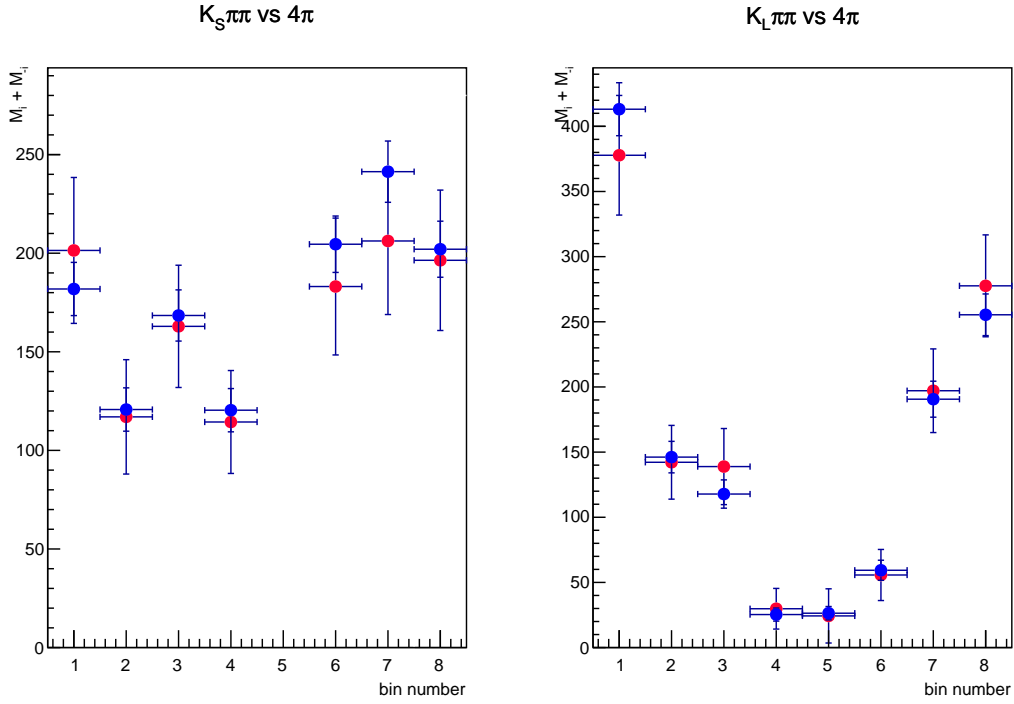


Figure 1.2: Distribution of MM over the bins for $\pi\pi\pi^0$ vs $K_S^0\pi\pi$ (left) and $\pi\pi\pi^0$ vs $K_L^0\pi\pi$ (right). The fit was performed on both modes simultaneously. Red: data, blue: fit values.

1.1.1 Change in input variables

input variable	shift [%]	shift/ σ_{fit}	$\sigma_{fit}/\sigma_{input}$
c_1	0.14	0.046	0.35
c_2	0.58	0.096	0.33
c_3	18	0.11	0.24
c_4	-0.82	0.087	0.35
c_5	-0.054	0.022	0.36
c_6	-0.74	0.12	0.3
c_7	10	0.19	0.33
c_8	0.92	0.12	0.33
T_1	0.26	0.084	1
T_2	-0.0084	-0.0063	1
T_3	-0.056	-0.021	0.99
T_4	-0.11	-0.027	0.99
T_5	0.44	0.16	0.99
T_6	-0.088	-0.048	1
T_7	-0.12	-0.082	1
T_8	-0.021	-0.013	1
T_{-1}	0.00034	0.0002	1
T_{-2}	0.00014	0.00013	1
T_{-3}	-0.0051	-0.0032	1
T_{-4}	-0.45	-0.047	0.99
T_{-5}	0.27	0.11	1
T_{-6}	-0.047	-0.023	1
T_{-7}	-0.04	-0.013	1
T_{-8}	-0.0016	-0.00044	1

Table 1.3: Amount by which the Gaussian constraint input variables are shifted in the fit with the $K_S^0\pi\pi$ mode only.

input variable	shift [%]	shift/ σ_{fit}	$\sigma_{fit}/\sigma_{input}$
c'_1	-0.11	-0.034	0.38
c'_2	-0.12	-0.018	0.39
c'_3	3.4	0.13	0.46
c'_4	-0.89	0.051	0.45
c'_5	0.077	-0.018	0.47
c'_6	1.1	-0.035	0.45
c'_7	1.1	0.073	0.48
c'_8	0.47	0.08	0.39
T'_1	-0.25	-0.1	1
T'_2	-0.082	-0.019	0.99
T'_3	0.43	0.089	0.99
T'_4	0.16	0.021	1
T'_5	-0.03	-0.0082	1
T'_6	-0.061	-0.018	1
T'_7	0.056	0.023	1
T'_8	0.15	0.061	1
T'_{-1}	-11	-0.65	0.9
T'_{-2}	-1	-0.051	0.95
T'_{-3}	3.9	0.21	0.96
T'_{-4}	0.71	0.034	0.99
T'_{-5}	-0.074	-0.0031	0.99
T'_{-6}	-0.53	-0.023	0.99
T'_{-7}	0.58	0.041	0.98
T'_{-8}	6.2	0.29	0.92

Table 1.4: Amount by which the Gaussian constraint input variables are shifted in the fit with the $K_L^0\pi\pi$ mode only.

input variable	shift [%]	shift/ σ_{fit}	$\sigma_{fit}/\sigma_{input}$
c_1	0.1	0.039	0.32
c_2	0.46	0.087	0.29
c_3	20	0.14	0.22
c_4	-1.1	0.13	0.32
c_5	-0.11	0.049	0.34
c_6	-0.75	0.13	0.28
c_7	11	0.21	0.32
c_8	1.1	0.14	0.3
c'_1	0.041	0.014	0.35
c'_2	0.39	0.071	0.34
c'_3	3.7	0.15	0.43
c'_4	-1.4	0.081	0.44
c'_5	-0.006	0.0014	0.46
c'_6	-0.31	0.01	0.43
c'_7	1.6	0.1	0.49
c'_8	0.9	0.16	0.38
T_1	0.25	0.081	0.99
T_2	-0.0098	-0.0073	1
T_3	-0.056	-0.021	0.99
T_4	-0.11	-0.026	0.99
T_5	0.43	0.16	0.99
T_6	-0.087	-0.048	1
T_7	-0.12	-0.082	1
T_8	-0.022	-0.014	1
T_{-1}	0.0022	0.0013	1
T_{-2}	0.00021	0.0002	1
T_{-3}	-0.005	-0.0032	1
T_{-4}	-0.42	-0.045	0.99
T_{-5}	0.27	0.11	1
T_{-6}	-0.046	-0.023	1
T_{-7}	-0.038	-0.012	1
T_{-8}	-0.0014	-0.00038	1
T'_1	-0.25	-0.1	1
T'_2	-0.088	-0.02	0.99
T'_3	0.44	0.089	0.99
T'_4	0.18	0.023	1
T'_5	-0.01	-0.0028	1
T'_6	-0.054	-0.016	1
T'_7	0.056	0.023	1
T'_8	0.14	0.06	1
T'_{-1}	-11	-0.66	0.89
T'_{-2}	-1.1	-0.055	0.95
T'_{-3}	4	0.21	0.96
T'_{-4}	0.77	0.037	0.99
T'_{-5}	-0.02	-0.0008	1
T'_{-6}	-0.46	-0.019	0.99
T'_{-7}	0.59	0.042	0.98
T'_{-8}	6.1	0.29	0.92

Table 1.5: Amount by which the Gaussian constraint input variables are shifted in the fit with the $K_S^0\pi\pi$ and $K_L^0\pi\pi$ mode simultaneously.

1.2 $KK\pi^0$

	$KK\pi^0$ vs $K_S^0\pi\pi$	$KK\pi^0$ vs $K_L^0\pi\pi$	simultaneous
F_+	0.539 ± 0.153	1.055 ± 0.237	0.747 ± 0.111
$h_{K_S^0\pi\pi}$	157.035 ± 24.108	—	155.592 ± 24.549
$h_{K_L^0\pi\pi}$	—	125.350 ± 26.758	146.618 ± 23.519
χ_{ndof}^2	0.168	0.971	0.824

Table 1.6: Results of the fit for F_+ in $\pi\pi\pi^0$.

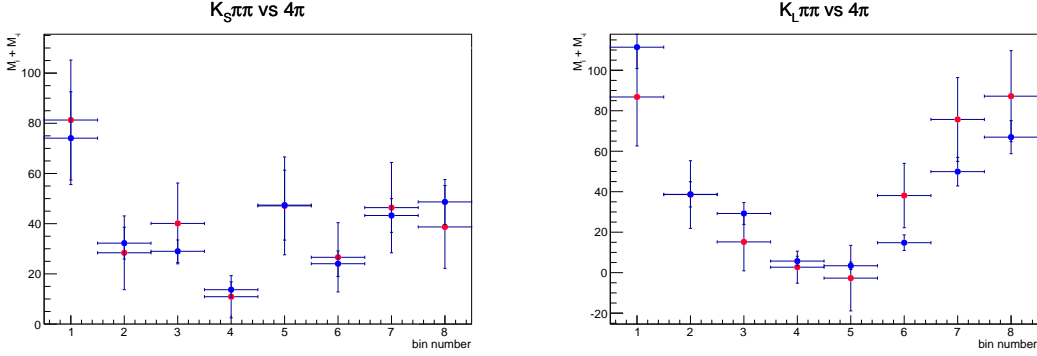


Figure 1.3: Distribution of MM over the bins for $KK\pi^0$ vs $K_S^0\pi\pi$ (left) and $KK\pi^0$ vs $K_L^0\pi\pi$ (right). The fit was performed on both modes independently of each other. Red: data, blue: fit values.

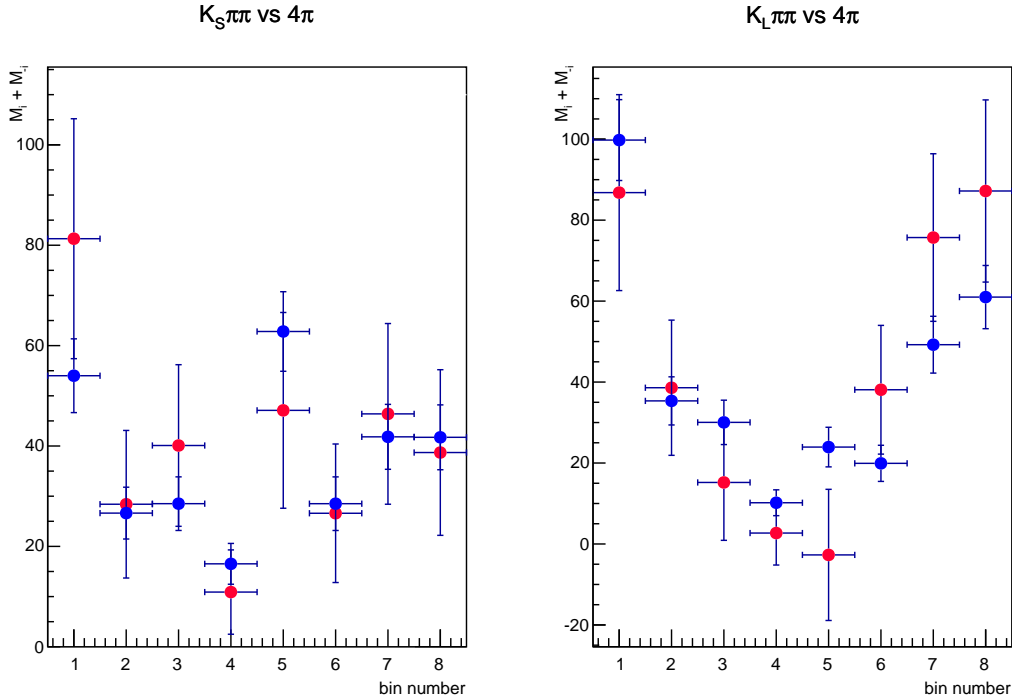


Figure 1.4: Distribution of MM over the bins for $\pi\pi\pi^0$ vs $K_S^0\pi\pi$ (left) and $\pi\pi\pi^0$ vs $K_L^0\pi\pi$ (right). The fit was performed on both modes simultaneously. Red: data, blue: fit values.

1.2.1 Change in input variables

input variable	shift [%]	shift/ σ_{fit}	$\sigma_{fit}/\sigma_{input}$
c_1	-0.0027	-0.00094	0.35
c_2	0.0041	0.00067	0.34
c_3	-0.25	-0.0016	0.24
c_4	-0.033	0.0035	0.35
c_5	-0.0069	0.0028	0.36
c_6	-0.0024	0.0004	0.3
c_7	0.015	0.00027	0.33
c_8	0.016	0.002	0.33
T_1	0.065	0.021	1
T_2	-0.0088	-0.0066	1
T_3	0.071	0.026	1
T_4	-0.057	-0.014	1
T_5	-0.0048	-0.0018	1
T_6	0.0084	0.0046	1
T_7	0.0079	0.0055	1
T_8	-0.039	-0.024	1
T_{-1}	0.0089	0.0051	1
T_{-2}	-0.0011	-0.001	1
T_{-3}	0.0066	0.0042	1
T_{-4}	-0.17	-0.018	1
T_{-5}	-0.003	-0.0012	1
T_{-6}	0.0029	0.0014	1
T_{-7}	0.0042	0.0014	1
T_{-8}	-0.037	-0.01	1

Table 1.7: Amount by which the Gaussian constraint input variables are shifted in the fit with the $K_S^0\pi\pi$ mode only.

input variable	shift [%]	shift/ σ_{fit}	$\sigma_{fit}/\sigma_{input}$
c'_1	-0.17	-0.053	0.38
c'_2	0.02	0.0032	0.39
c'_3	-2.7	-0.11	0.47
c'_4	0.54	-0.03	0.46
c'_5	0.18	-0.042	0.47
c'_6	-3.5	0.11	0.46
c'_7	2.3	0.15	0.48
c'_8	0.38	0.064	0.39
T'_1	-0.17	-0.068	1
T'_2	-0.0084	-0.0019	1
T'_3	-0.3	-0.061	1
T'_4	-0.1	-0.013	1
T'_5	-0.0076	-0.0021	1
T'_6	0.14	0.04	1
T'_7	0.14	0.056	1
T'_8	0.1	0.043	1
T'_{-1}	-7.4	-0.4	0.99
T'_{-2}	-0.07	-0.0034	0.99
T'_{-3}	-2.8	-0.15	0.99
T'_{-4}	-0.46	-0.022	1
T'_{-5}	0.21	0.0085	0.99
T'_{-6}	1.1	0.049	1
T'_{-7}	1.5	0.1	0.99
T'_{-8}	4.5	0.2	0.97

Table 1.8: Amount by which the Gaussian constraint input variables are shifted in the fit with the $K_L^0\pi\pi$ mode only.

input variable	shift [%]	shift/ σ_{fit}	$\sigma_{fit}/\sigma_{input}$
c_1	-0.097	-0.036	0.32
c_2	0.026	0.0048	0.3
c_3	-5	-0.033	0.22
c_4	0.22	-0.025	0.32
c_5	0.053	-0.023	0.34
c_6	0.026	-0.0044	0.28
c_7	-0.77	-0.015	0.32
c_8	-0.033	-0.0045	0.31
c'_1	-0.1	-0.034	0.36
c'_2	0.022	0.0039	0.34
c'_3	-1.4	-0.059	0.44
c'_4	0.78	-0.045	0.45
c'_5	0.28	-0.064	0.46
c'_6	-1.2	0.039	0.44
c'_7	1.2	0.077	0.5
c'_8	0.23	0.039	0.38
T_1	0.19	0.062	1
T_2	0.0036	0.0026	1
T_3	0.073	0.027	1
T_4	-0.14	-0.033	1
T_5	-0.11	-0.041	1
T_6	-0.0072	-0.0039	1
T_7	0.011	0.0078	1
T_8	-0.011	-0.0066	1
T_{-1}	0.018	0.011	1
T_{-2}	0.00025	0.00023	1
T_{-3}	0.0067	0.0043	1
T_{-4}	-0.5	-0.052	1
T_{-5}	-0.063	-0.026	1
T_{-6}	-0.0031	-0.0015	1
T_{-7}	0.0046	0.0015	1
T_{-8}	-0.0067	-0.0018	1
T'_1	-0.081	-0.033	1
T'_2	0.053	0.012	1
T'_3	-0.34	-0.07	1
T'_4	-0.44	-0.057	1
T'_5	-0.22	-0.06	1
T'_6	0.14	0.04	1
T'_7	0.15	0.06	1
T'_8	0.13	0.054	1
T'_{-1}	-3.2	-0.17	0.99
T'_{-2}	0.56	0.027	0.99
T'_{-3}	-2.9	-0.15	0.99
T'_{-4}	-2.2	-0.1	0.99
T'_{-5}	-5.1	-0.21	0.99
T'_{-6}	1.6	0.066	1
T'_{-7}	1.2	0.086	1
T'_{-8}	4.6	0.2	0.98

Table 1.9: Amount by which the Gaussian constraint input variables are shifted in the fit with the $K_S^0\pi\pi$ and $K_L^0\pi\pi$ mode simultaneously.