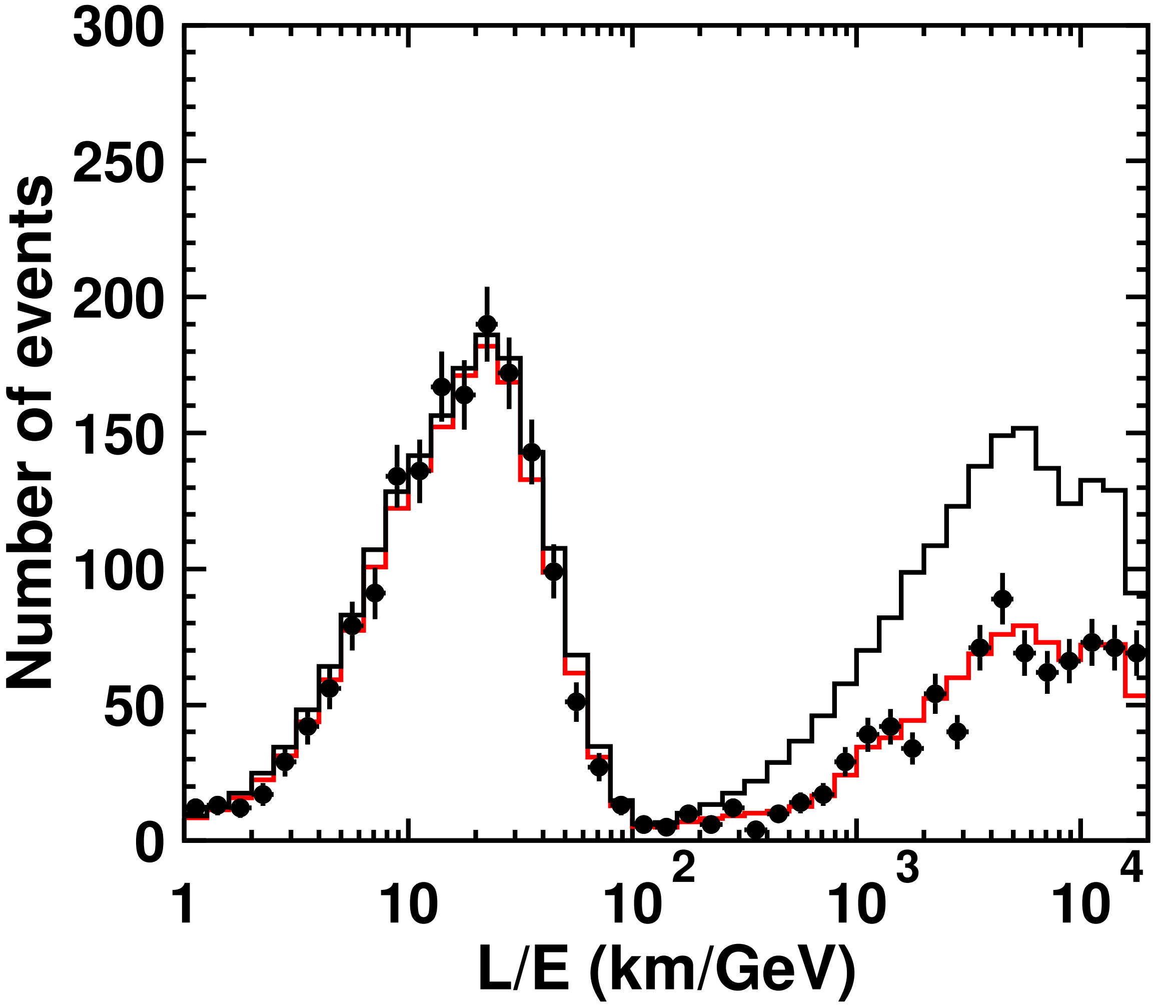
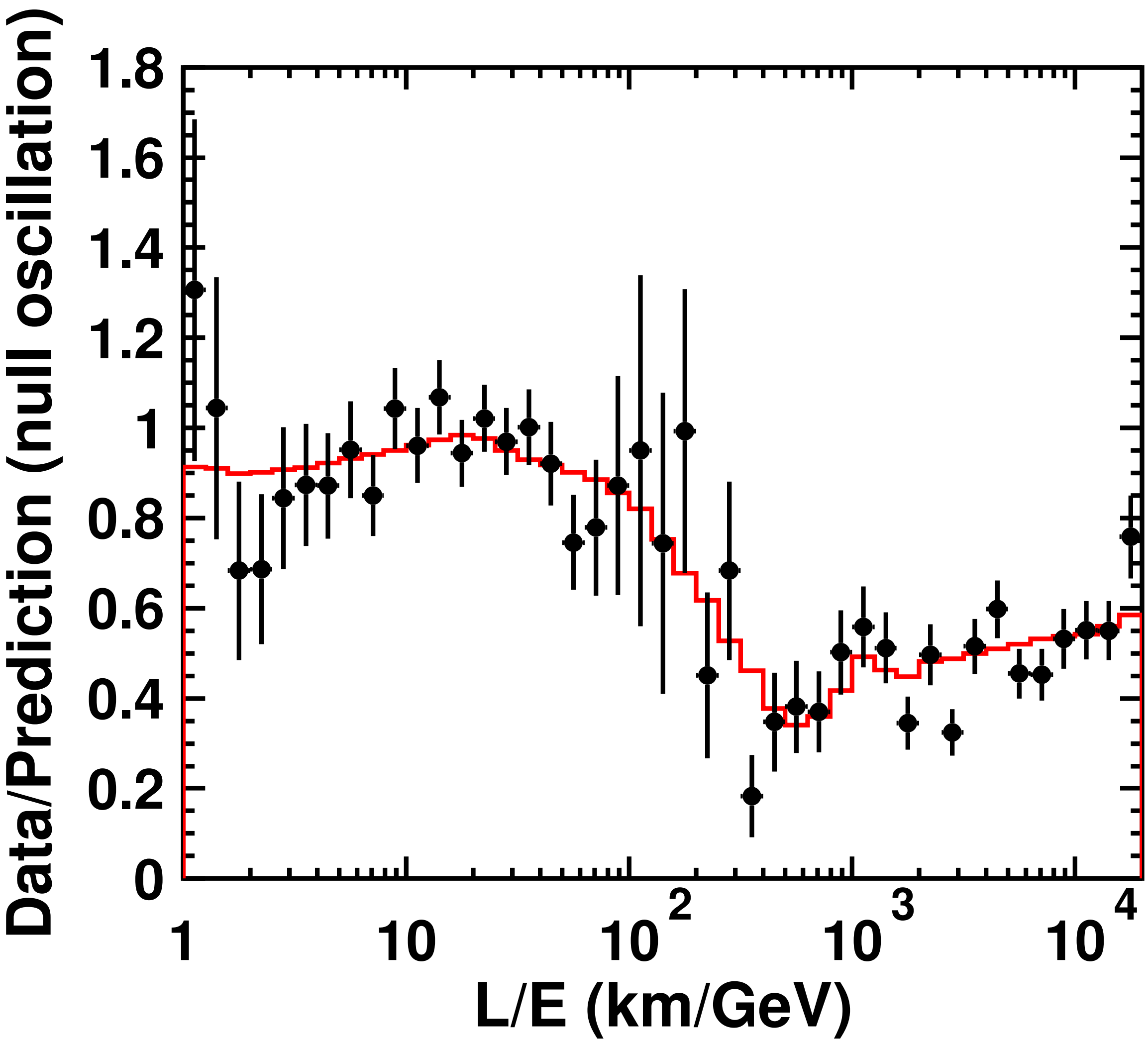
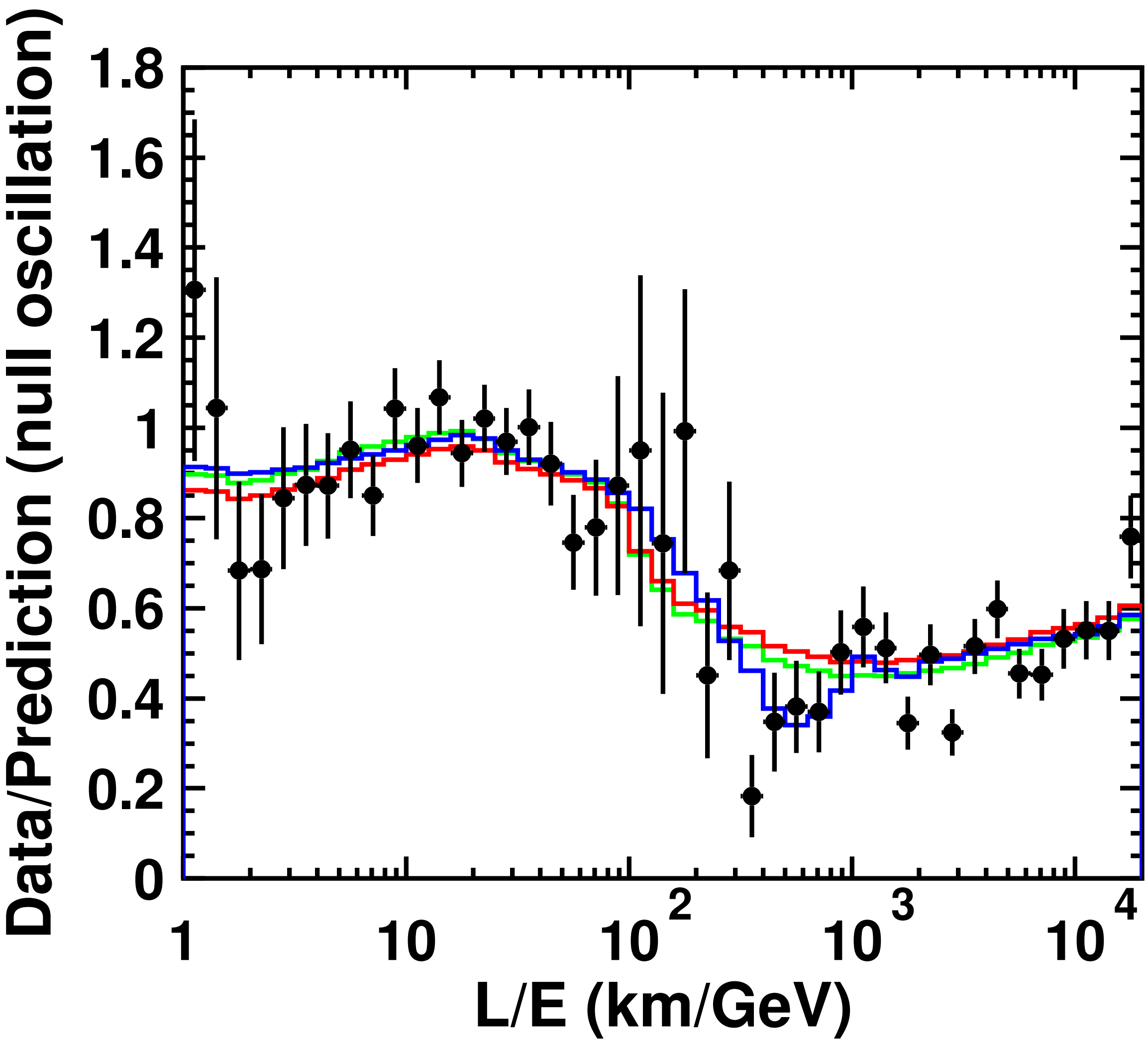
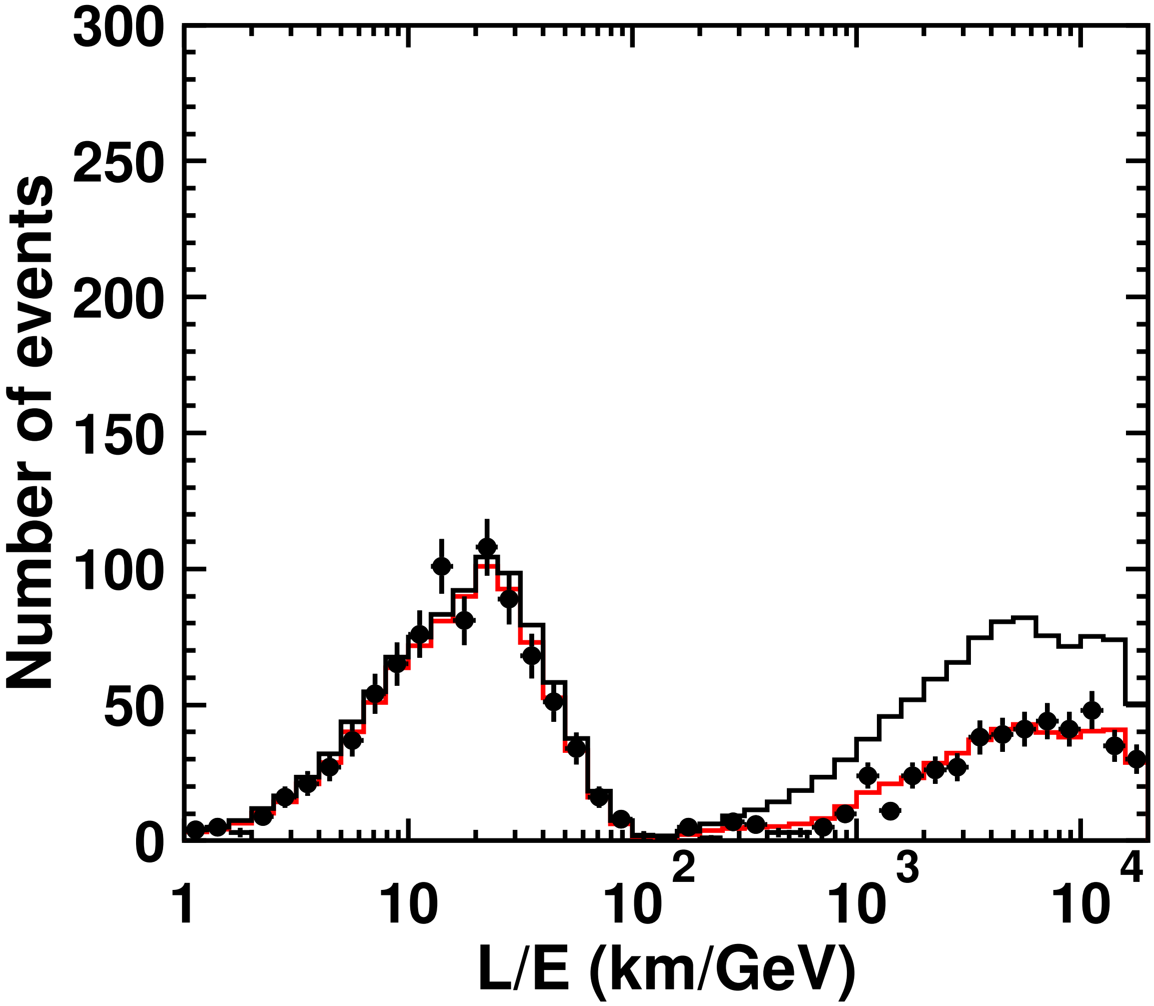

Number of events
300
250
200
150
100
50
0
1
10
10^2
10^3
10^4
L/E (km/GeV)

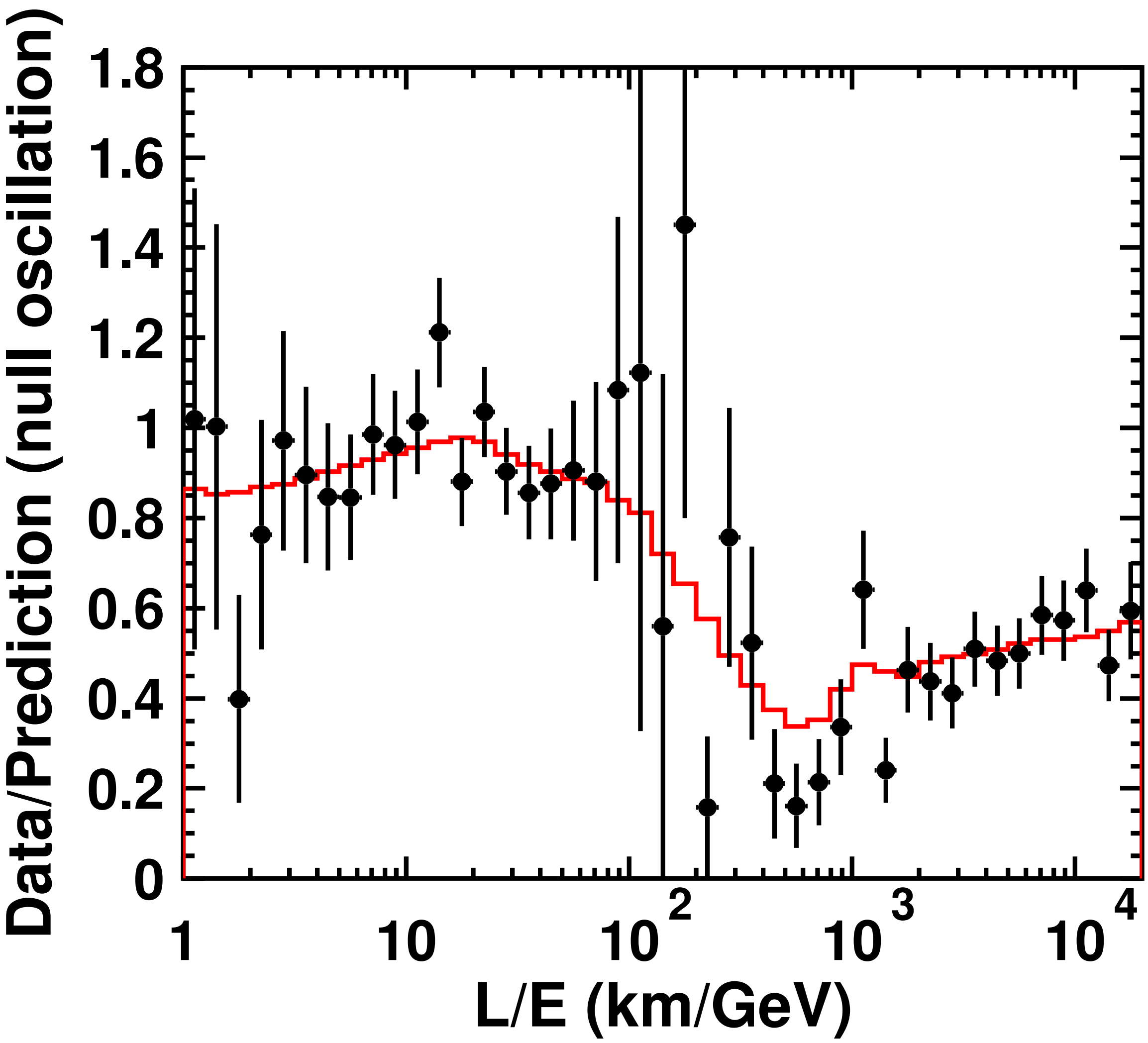

Data/Prediction (null oscillation)
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1
10
10 2
10 3
10 4
L/E (km/GeV)



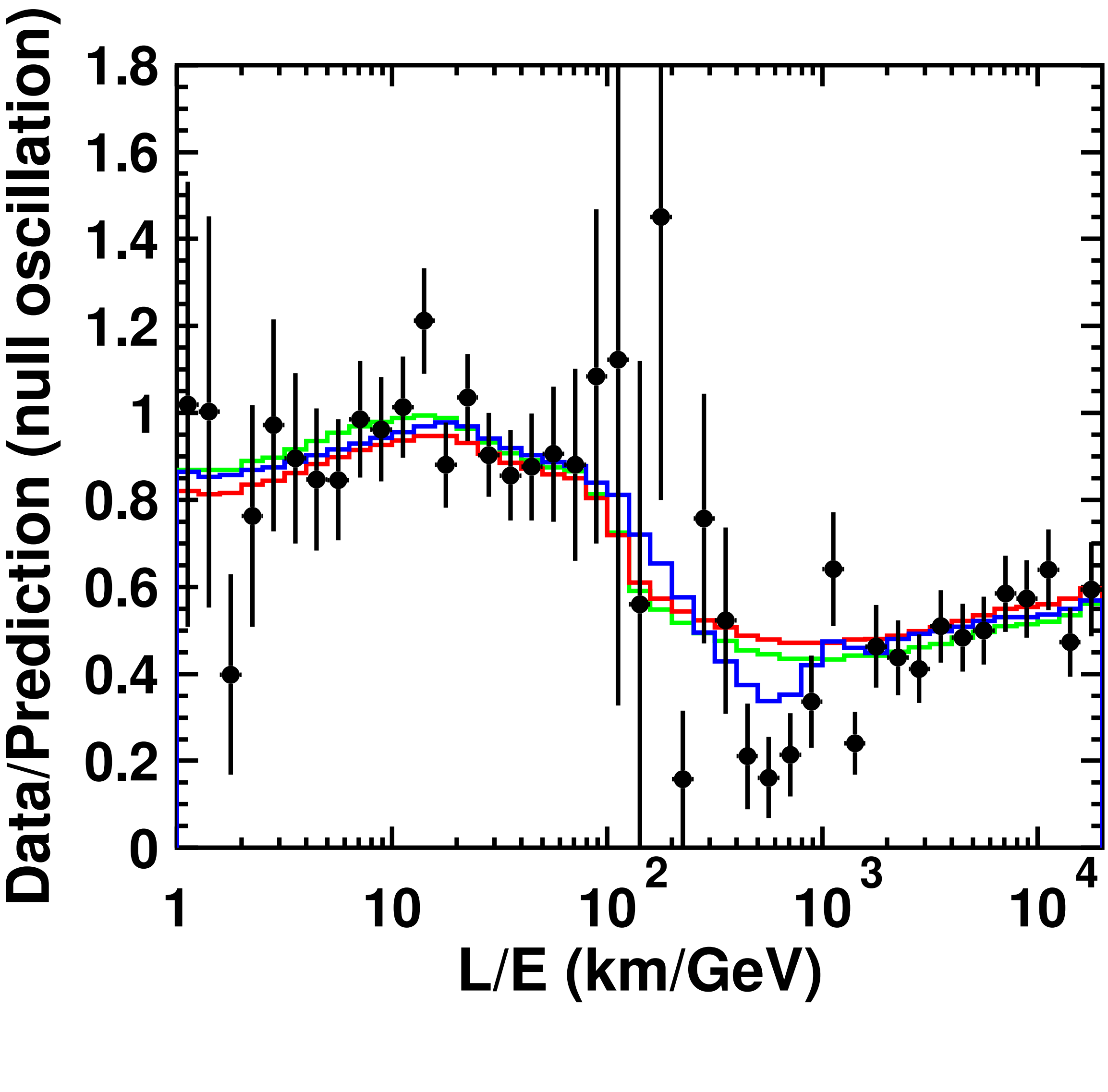
Data/Prediction (null oscillation)
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1
10
10^2
10^3
10^4
L/E (km/GeV)

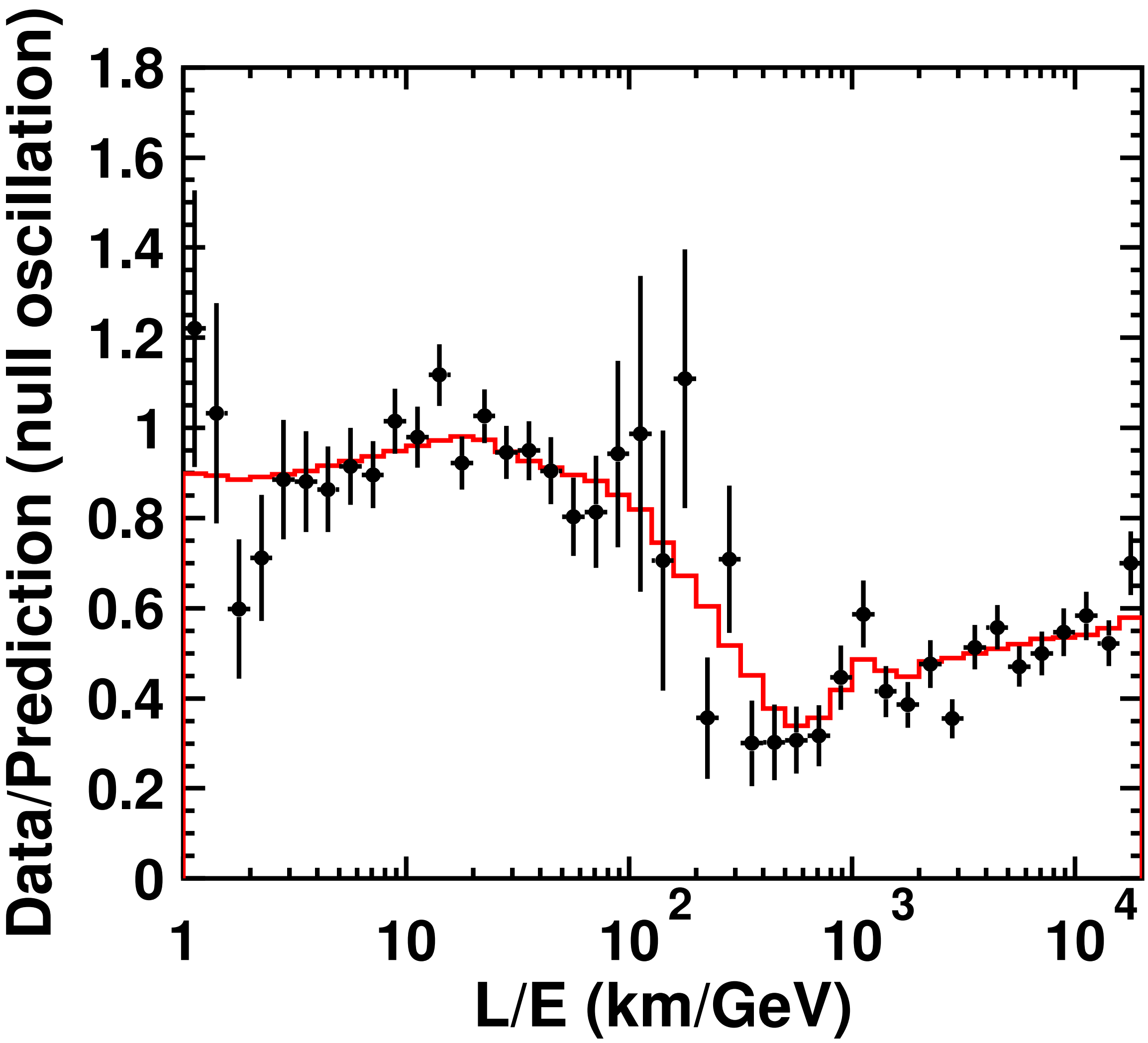


300
250
200
150
100
50
0
Number of events
1
10
10^2
10^3
10^4
L/E (km/GeV)

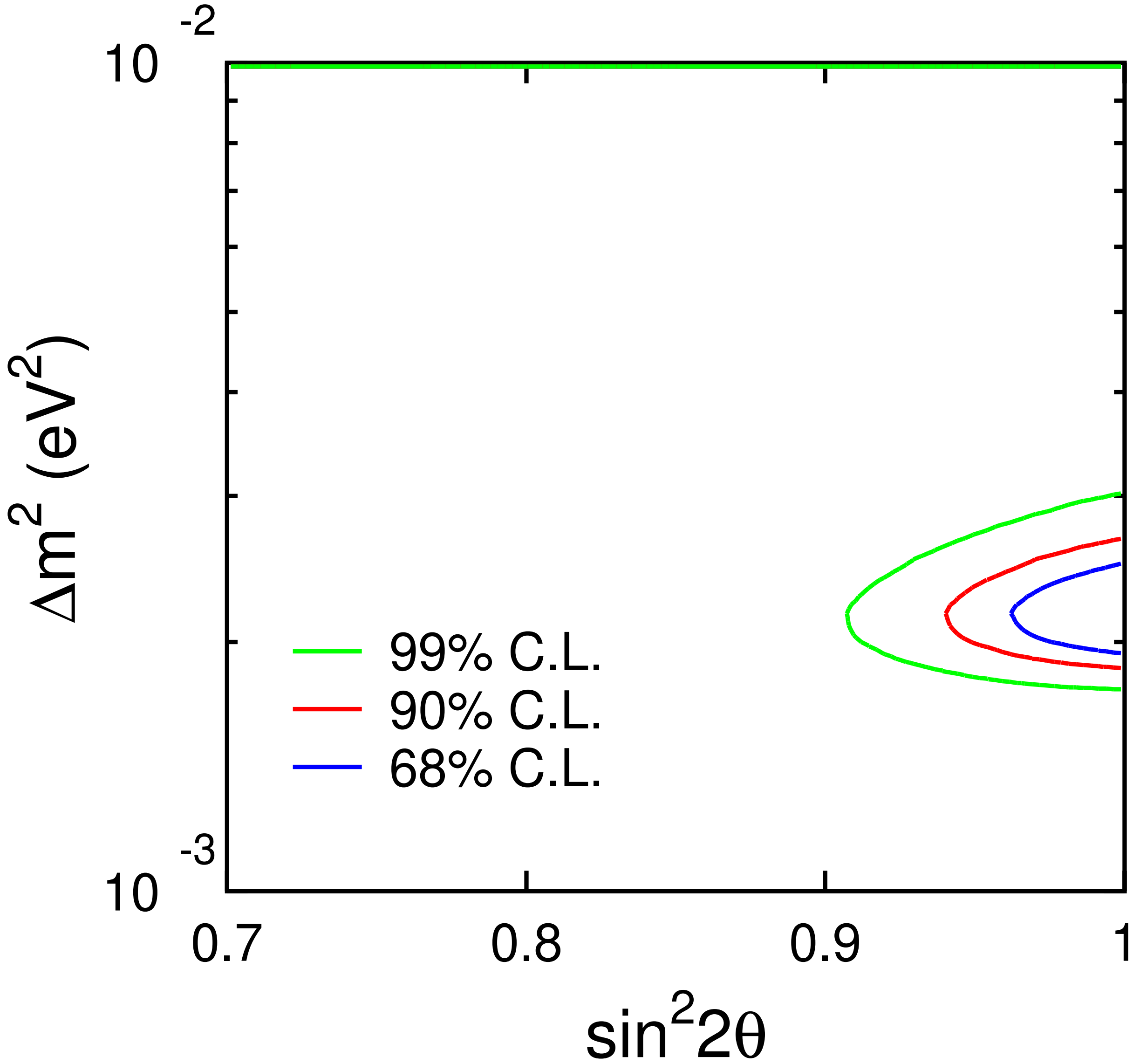


Data/Prediction (null oscillation)
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1
10
10^2
10^3
10^4
L/E (km/GeV)

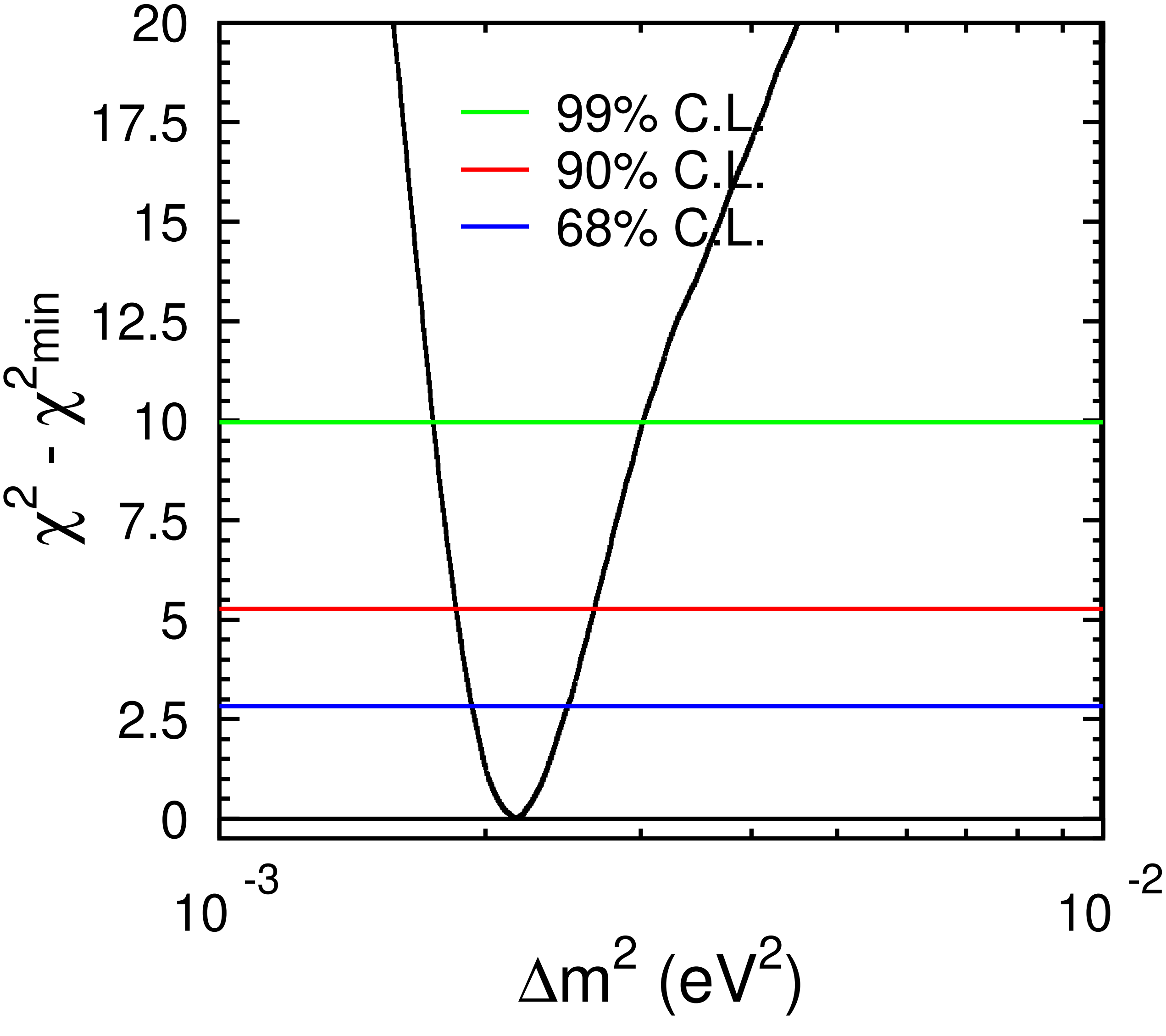

Data/Prediction (null oscillation)
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1
10
10^2
10^3
10^4
L/E (km/GeV)



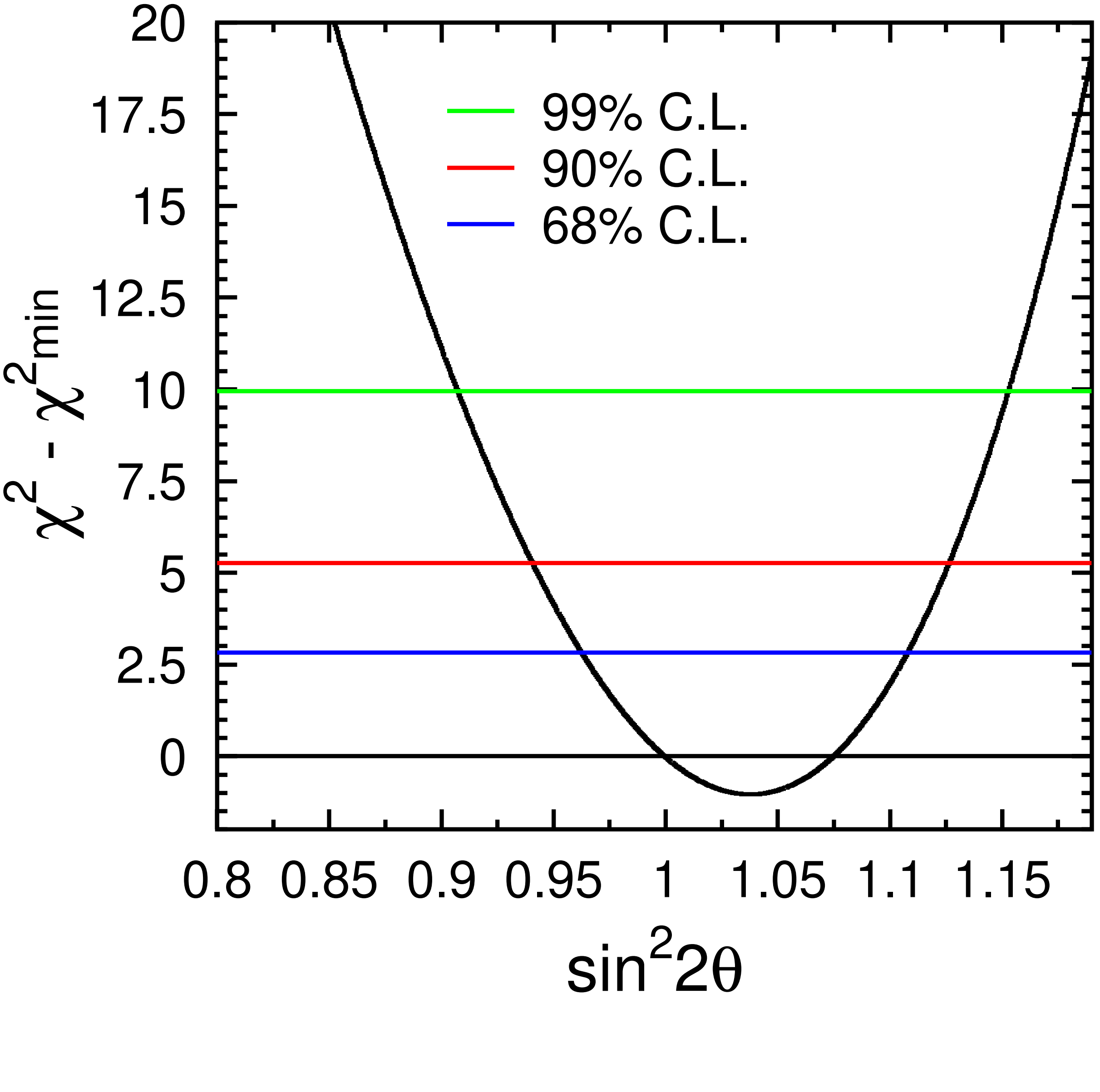
Data/Prediction (null oscillation)
L/E (km/GeV)
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
1
10
10^2
10^3
10^4



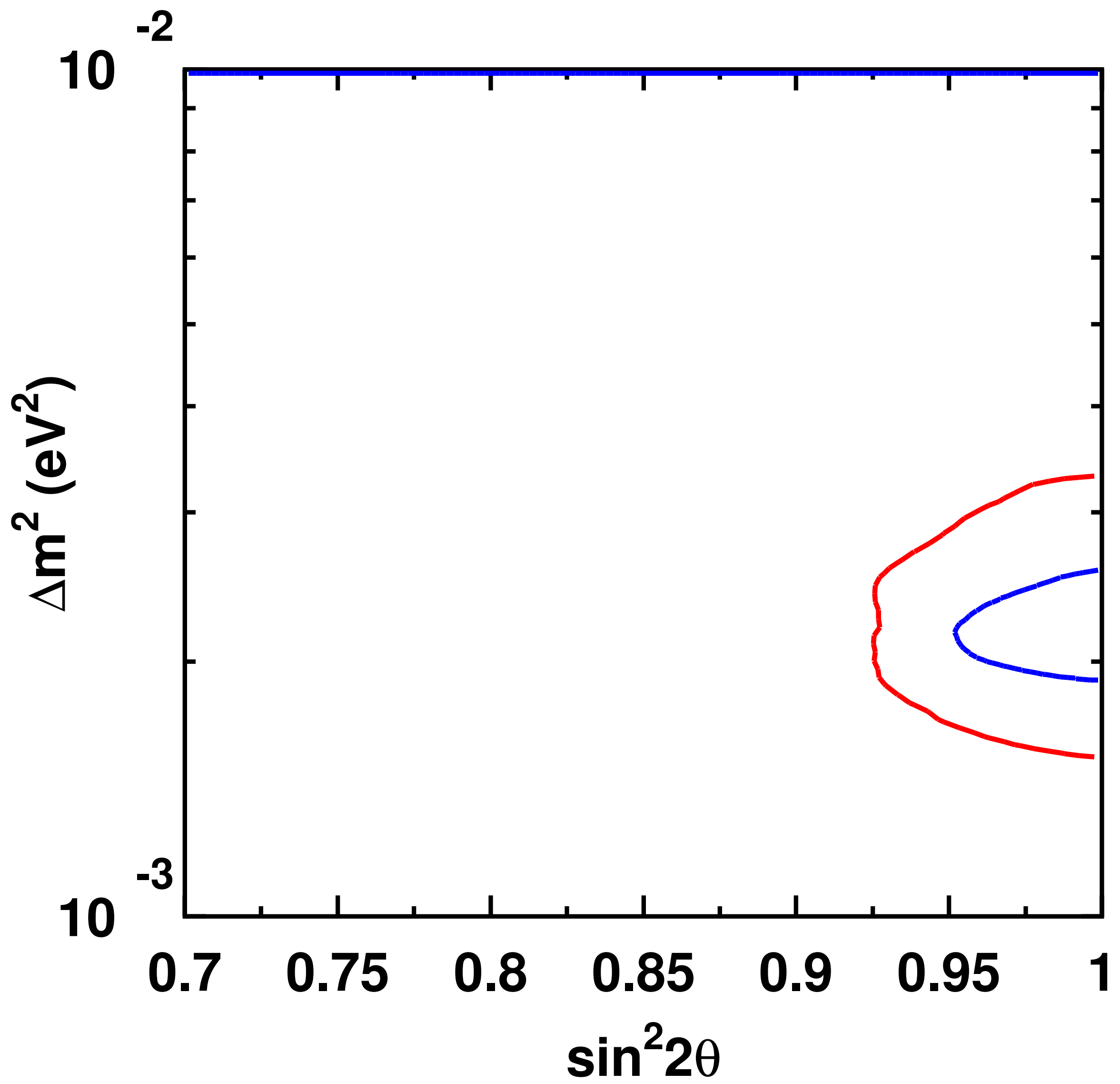
10^{-2}
10^{-3}
Δm^2 (eV^2)
0.7
0.8
0.9
1
$\sin^2 2\theta$
99% C.L.
90% C.L.
68% C.L.



99% C.L.
90% C.L.
68% C.L.
20
17.5
15
12.5
10
7.5
5
2.5
0
$\chi^2 - \chi^2_{min}$
10^{-3}
10^{-2}
Δm^2 (eV^2)



20
17.5
15
12.5
10
7.5
5
2.5
0
0.8
0.85
0.9
0.95
1
1.05
1.1
1.15
$\chi^2 - \chi^2_{min}$
$\sin^2 2\theta$
99% C.L.
90% C.L.
68% C.L.


10^{-2}
10^{-3}
Δm^2 (eV^2)
0.7
0.75
0.8
0.85
0.9
0.95
1
$\sin^2 2\theta$

List of Systematics for SK1

Sys ID	Sys value	Pull term	Best fit phys	Best fit
1	10.0000	0.0000	0.0013	0.0078
2	0.0060	0.0000	0.0000	0.0000
3	0.0600	0.0082	0.0054	0.0054
4	0.0100	0.0011	0.0003	-0.0002
5	0.0100	0.0130	0.0011	-0.0003
6	0.1000	0.0026	0.0051	0.0045
7	0.0500	0.0910	-0.0151	-0.0150
8	0.0500	0.1487	-0.0193	-0.0193
9	0.1000	0.4989	0.0706	0.0712
10	0.1000	0.0239	-0.0154	-0.0157
11	0.0500	0.0754	-0.0137	-0.0138
12	1.0000	0.0131	-0.1146	-0.1226
13	0.2000	0.0232	0.0305	0.0337
14	0.0020	0.0001	0.0000	0.0000
15	0.0240	0.0214	-0.0035	-0.0035
16	0.1000	0.0039	0.0063	0.0064
17	0.0100	0.0001	-0.0001	-0.0001
18	0.1000	0.0011	0.0033	0.0033
19	0.0110	0.0734	-0.0030	-0.0030
20	0.0060	0.1030	0.0019	0.0018
21	0.3000	0.0000	-0.0013	-0.0014
22	0.0100	0.0000	0.0000	0.0000
23	0.1500	0.0014	0.0057	0.0055
24	0.2000	0.0214	-0.0293	-0.0324
25	0.2000	0.8471	0.1841	0.1848
26	0.2000	0.0238	-0.0308	-0.0323
27	0.4000	0.0001	-0.0039	-0.0056
28	0.1130	0.0109	-0.0118	-0.0115
29	0.0740	0.0017	0.0031	0.0026

List of Systematics for SK2

Sys ID	Sys value	Pull term	Best fit phys	Best fit
1	10.0000	0.0000	-0.0396	-0.0097
2	0.0050	0.0003	-0.0001	-0.0001
3	0.0600	0.0000	0.0004	0.0005
4	0.0100	0.0006	0.0002	-0.0007
5	0.0100	0.0240	0.0015	-0.0014
6	0.1000	0.0010	-0.0032	-0.0040
7	0.0500	0.0373	-0.0097	-0.0096
8	0.0500	0.0264	-0.0081	-0.0088
9	0.1000	0.3529	0.0594	0.0604
10	0.1000	0.0002	0.0014	-0.0007
11	0.0500	0.0968	-0.0156	-0.0152
12	1.0000	0.0196	0.1398	0.1003
13	0.2000	0.0008	-0.0057	0.0030
14	0.0020	0.0002	0.0000	0.0000
15	0.0480	0.1307	-0.0174	-0.0175
16	0.1000	0.0053	-0.0073	-0.0071
17	0.0100	0.0007	-0.0003	-0.0003
18	0.1000	0.0212	0.0146	0.0145
19	0.0170	0.0003	-0.0003	-0.0009
20	0.0060	0.0142	0.0007	0.0005
21	0.3000	0.0746	0.0819	0.0830
22	0.0100	0.0000	0.0000	0.0000
23	0.1900	0.0001	-0.0022	-0.0023
24	0.2000	0.1137	-0.0674	-0.0660
25	0.2000	0.8280	0.1820	0.1815
26	0.5000	0.0368	-0.0959	-0.1146
27	0.4000	0.0277	-0.0665	-0.0606
28	0.1800	0.0145	-0.0217	-0.0210
29	0.1400	0.0002	0.0021	0.0005

Results of L/E Analysis
(1489(SK1) + 804(SK2) days FC + PC)

- **Assuming $\nu_\mu \leftrightarrow \nu_\tau$ Oscillation**

  Best Fit:

  $\chi^2{}_{min} =$ 80.0 / 83 d.o.f

  at ($\sin^2 2\theta$, Δm^2) = (1.00 , 2.2E-03 eV^2)

  (including unphysical region)

  $\chi^2{}_{min} =$ 78.9 / 83 d.o.f

  at ($\sin^2 2\theta$, Δm^2) = (1.04 , 2.2E-03 eV^2)

  90% confidence level allowed region:

  $\sin^2(2\theta) > 0.94$

  1.85 '$\times 10^{-3}$ $eV^2 < \Delta m^2 <$ '2.65' $\times 10^{-3}$ eV^2'

- **Assuming Neutrino Decay**

  $\chi^2{}_{min} =$ 97.1 / 83 d.o.f

  $\Delta\chi^2 =$ 17.1 / 83 d.o.f (4.1 standard deviations)

- **Assuming Neutrino Decoherence**

  $\chi^2{}_{min} =$ 105.2 / 83 d.o.f

  $\Delta\chi^2 =$ 25.2 / 83 d.o.f (5.0 standard deviations)