Summary of event reduction in Scifi

Here a summary table of the Scifi event reduction is given with flux ratios of observation to prediction for each run period. For explanation of each readuction step, please see the caption on the official home page.

Run **Total pot**	**June 1999** **1161∼1276** 2.28×10^{18}		**Nov 1999** **2000∼2218** 1.94×10^{18}	
	DATA	**MC**	**DATA**	**MC**
Total # of spill	**481344**	**55716** **CC 41007** **NC 14709**	**395647**	**47004** **CC 34402** **NC 12602**
After 1st reduction	**1601**	**11625**	**1769**	**11830**
After fid. vol. cut	**333**	**8229**	**384**	**8302**
Trac correlation cut	**330**	**8213**	**380**	**8295**
After veto cut	**315**	**8213**	**367**	**8295**
# of final sample	**315**	**8213** **CC 8187** **NC 26**	**367**	**8295** **CC 8274** **NC 21**
Efficiency from total volume (8.28tons) (%)		**14.7** **CC 20.0** **NC 0.2**		**17.6** **CC 24.1** **NC 0.2**
Efficiency from fiducial volume (5.94tons) (%)		**20.5** **CC 27.9** **NC 0.3**		**24.5** **CC 33.6** **NC 0.3**
Number of events	**316±18(stat.)$^{+29}_{-33}$(syst.)**		**348±19(stat.)$^{+34}_{-38}$(syst.)**	
M.C. Expected	**381**		**403**	
flux ratio (DATA/MC)	**0.83±0.05(stat.)$^{+0.08}_{-0.09}$(syst.)**		**0.86±0.05(stat.)$^{+0.08}_{-0.09}$(syst.)**	

Table 1: A summary table of the Scifi event reduction

SK expected number of events

Here, a formula to calculate expected number of events in SK from the evaluation of the Scifi detector analysis is given. The computed values in two run periods, i.e. June and November in 1999, are listed in a below table. And also, systematic errors for the evaluation of SK expected values are shown in a second table.

$$N_{SK} = \frac{N_{obs}}{\varepsilon M} \times \frac{F_{SK}}{F_{FD}} \times \frac{T_{SK}}{T_{FD}} \times \varepsilon_{SK} \tag{1}$$

N_{SK} : **Expected number of events @ SK**
N_{obs} : **Observed number of events @ FD (Scifi, MUC, 1kt)**
ε: **detection efficiency @ FD**
M : **Fiducial mass of FD**
$\frac{F_{SK}}{F_{FD}}$: **Far/near-ratio**
T_{SK} : **SK live-time (total p.o.t)**
T_{FD} : **FD live-time (total p.o.t)**
ε_{SK} : **detection efficiency @ SK**

Detector	**period**	N_{SK}
Scifi	**Jun. 1999**	$5.1 \pm 0.3(stat.)^{+0.7}_{-0.8}(syst.)$
	Nov. 1999	$6.4 \pm 0.3(stat.)^{+0.9}_{-1.0}(syst.)$

Table 2: SK exepcted values estimated from the Scifi analysis

Scifi	Systematic error(%)
$\Delta V/V$	$\pm$**3.0**
Background	$\pm$**1.4(Jun.),** $\pm$**3.1(Nov.)**
Tracking eff.	$+$**5.5**$-$**5.0**
Reduction	$\pm$**1.0**
MC model	$+$**3.0**$-$**6.0**
cross section(CC/NC)	$\pm$**6.0**
Total for scifi	$^{+9.3}_{-10.4}$**(Jun.),** $^{+9.7}_{-10.8}$**(Nov.)**
POT normalize	$\pm$**1.7(Jun.),** $\pm$**3.7(Nov.)**
far/near	$+$**7.7** $-$**10.4**
sk det. eff.	$\pm$5.0
Total for SK expect	$^{+13.2}_{-15.8}$**(Jun.),** $^{+13.9}_{-16.2}$**(Nov.)**

Table 3: Systematic errors for the evaluation of SK expected values