A World Average of Fluorescence Yield Measurements

Robert Cady
Dept of Physics and Astronomy
University of Utah

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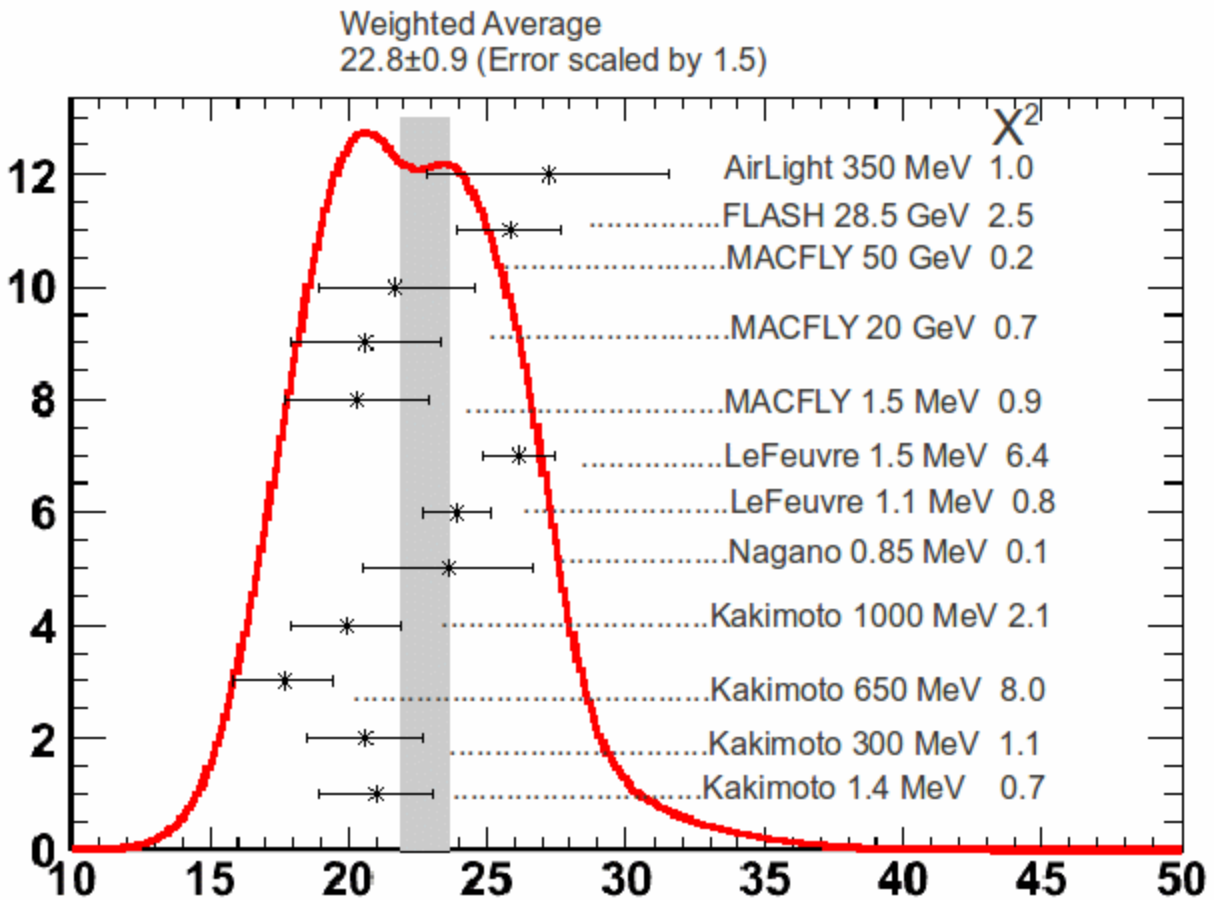
Air Fluorescence Data

Experiment	Δλ(nm)	P(hPa)	T(°K)	E	Result	Error	Yield (ph/MeV)
Kakimoto	300-400	1013	288	1.4 MeV	3.3 ph/m	10%	21.0±2.1
				300 MeV	4.9 ph/m	10%	20.6±2.1
				650 MeV	4.4 ph/m	10%	17.7±1.8
				1000 MeV	5.0 ph/m	10%	19.9±2.0
Nagano	337	1013	293	0.85 MeV	1.021 ph/m	13%	23.6±3.1
LeFeuvre	300-430	1005	296	1.1 MeV	3.95 ph/m	5%	23.9±1.2
				1.5 MeV	4.34 ph/m	5%	26.1±1.3
MACFLY	290-440	1013	296	1.5 MeV	17.0 ph/MeV	13%	20.3±2.6
				20 GeV	17.4 ph/MeV	13%	20.6±2.7
				50 GeV	18.2 ph/MeV	13%	21.7±2.8
FLASH	300-420	1013	304	28.5 GeV	20.8 ph/MeV	7.5%	25.8±1.9
AirLight	337	Null		0.2-2.0 MeV	384 ph/MeV	16%	27.2±4.4

Yields recalculated for 800 hPa, 293 °K, Δλ=300-420 nm

Weighted average of these results gives at P=800 hPa, T=293°K in dry air:
Y=22.8±0.9 ph/MeV
Weighting factor = $1/(\text{error})^2$
Average error scaled up by 1.5 due to X^2 of 24.6/11



In addition, the simulations of Rosado, Blanco, and Arqueros change some of the yields. If we use their numbers we get:

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This gives a weighted average of 24.7±0.8 ph/MeV with same conditions as before.
The error was scaled up by 1.3 due to X^2 of 19.7/11