Exponentialfit_Abraham_et_al fits a single exponential function of the form $\boldsymbol{y = -a * (exp(b * x) - c)}$, separately on decay and recovery phases of Off response (and similarly recovery and decay of On response) of the averaged light response curve (obtained after pre-processing imaging data in Igor Pro) to find the best fit exponential curve and estimate response amplitude and speed, Tau.

Convert the averaged traces (Averages0) and Quality indices (QualityCriterion) CSV files into the format (shown below) which can be input into the Python code **Exponentialfit_Abraham_et_al**

AVG.csv

Averages0[][0]	Averages0[][1]	Averages0[][2]	Averages0[][3]	Averages0[][4]
0.643798	1.66376	-1.30014	-0.02628	0.988434
0.649784	1.6648	-1.29674	-0.02872	0.978737
0.645395	1.66584	-1.29334	-0.03116	0.969039
0.641005	1.66688	-1.28994	-0.0336	0.959341
0.636615	1.67	-1.28654	-0.03604	0.949644
0.632226	1.67312	-1.28314	-0.03847	0.93916
0.627836	1.67624	-1.27804	-0.04091	0.928676

QI.csv

ROI	QualityCriterion
1	0.597378
2	0.825318
3	0.829877
4	0.719753
5	0.788928

The PYTHON function **Exponentialfit_Abraham_et_al** creates an output file **pythonFit.csv** The variable names for the columns in pythonFit.csv are given below:

Column 1:	index; index
Column 2:	ROI; ROI number
Column 3:	QI; Quality index
Column 4:	Flag; indicates if the fit worked; 1 if worked, 0 if no
Column 5:	Amp_exp; Amplitude of the best fit curve
Column 6-11:	a1, b1, c1, a2, b2, c2, respectively. Coefficients of the function y=-a*(exp(b*x)-c) for phase 1 and phase 2
Column 7:	b1 = rate 1; (tau1 = 1/rate1)
Column 10:	b2 = rate 2; (tau2 = 1/rate2)
Column 12-13:	R_Sq1','R_Sq2' respectively; R squared values of fits 1 and 2
Column 14-15:	'Base_begin','Base_end' respectively; begin and end values of averaged trace
Column 16:	'Cum_sum'; sum of the average trace offset to start at zero