I started with these parameters and settings and get a fit that looks good by eye in linear display, but bad in logarithmic display and which has the atrocious Chi2 values you see. However, the range of values expected from my reporter should be in the 2-3.2ns range, so the Tau values are believable. (Next 10 screenshots):





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Lifetime Stray Light Anisotropy No. Threads Algorithm 8 Variable Projection

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So next, I tried changing the algorithm parameter to "Maximum Likelihood" as one of your tutorials suggested it for low-data-point data. This made the Chi2 values significantly better, but the Tau values are no longer realistic and the curve seems to fit the decay part of the curve much less well. (see next 3 screenshots):



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So, then, I tried to force the curve to fit the data a bit better by changing the Stray Light Offset to  $10^{-2}$  to pull the bottom end of the curve up near the bottom end of the data. This made the strange initial spike happen that you see below (this spike makes no sense to me since I haven't increased the number of exponentials from 1...). See the following two screenshots:



Next, I tried leaving these parameters alone and trying to get rid of the odd spike by changing the data minimum to the IRF minimum to try to exclude the data in that region of the curve. This didn't work, although the curve does visually fit the data waaay better:

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I also tried variations of removing the Data Time Minimum and changing the Algorithm to "Variable Projection" which both give negative Tau values. I also tried increasing the no. exp. to 2 which actually made the cure obviously bad visually (although the Chi2 value somehow went to near 1). Additionally, the Tau values from both weren't realistic and no. exp. should certainly be 1 since I'm using a donor fluorophore with a mono-exponential decay profile physically tethered in proximity to the acceptor molecule. Can you help me to fix this fitting issue?