1. Data manipulation
   1. Convert *T*/*T* into , the thickness-averaged excess minority carrier concentration in the film in units of cm-3.
   2. Ensure that the time data (*t*) is in units of ns.
   3. Place *t* and  data for each dataset into the Matlab workspace as separate arrays (e.g. ‘*x*’ and ‘*y*’, but the names are up to you)
2. Fit individual datasets using plentyOfRope.m
   1. Run plentyOfRope.m
   2. Load (*t*, ) data from the workspace
   3. Label the dataset in the field “Dataset Name”. This label is saved in the fit structure output. You can leave it blank or as the default, but it’s useful to have a recognizable label.
   4. Fit the data! There are many options available. Several points worth mentioning:
      1. Fits are performed only over data visible in the current plot. Therefore, you can use select segments of your data to constrain select parameters. This is useful for determining data offsets, if any, before performing the final fit to the whole dataset.
      2. The current model is plotted a solid black line; the previous model is plotted as a dashed black line
      3. The model is recalculated every time a model parameter is changed. Since the ‘Numerical’ solver takes some time, this can be frustrating if you want to change several parameters at once. In order to prevent the model from re-calculating you can enable “Latch model?”. This prevents the model from re-calculating until it is disabled.
      4. If “plot covariance?” is selected, covariance plots for the fitted parameters will be displayed after every fit.
      5. Each fit generates a number of separate figure windows displaying information about the fit. These figures are updated with every fit.
3. Save fits for future use using dispFCFit.m
   1. Each time “Fit Data” is run within plentyOfRope.m, an output structure named “fitInfo##” is saved to the base workplace. The number ## corresponds to the field “last fit #” displayed in the main GUI window.
   2. The output structure contains all of the information displayed in the plentyOfRope GUI. This includes the data, data offsets, weights, model parameters, and goodness-of-fit parameters.
   3. A good way to save the fit for future use is to run dispFCFit.m with the fit output structure as the only argument, *i.e.* >> dispFCFit(fitInfo1). This generates a fit result figure. It also generates the covariance plots in a second window. The fit result figure contains the fit output structure in the UserData field. Therefore you can store the fit by saving the figure.
4. Perform global fits over multiple datasets using slightlyLessRope.m
   1. For each dataset, load a fit result structure into the base workspace.
   2. Call slightlyLessRope.m using an array of fit result structures as the only argument
      1. *i.e.* >> slightlyLessRope([sample2BluePumpFit3 sample2RedPumpFit7])
   3. Fit the data! Several points are worth mentioning:
      1. The columns “XX used?” and “XX was fit?” display information about the fit result structure that was passed to slightlyLessRope.m
      2. The “Scale Weights?” option will normalize the least-squares weights for each dataset by the maximum value in the dataset. This is useful when fitting datasets with widely varying scales (*e.g.* due to varying the excitation fluence).