Deconvolution of decay kinetics against instrumental response

Last revised: 2013-11-26

Sub-folder containing the data files (empty for root): DataFolder := "data"

Initialize

========== Data files ==========

$$\text{Load} := \begin{pmatrix} \text{SAMPLE} & \text{"signal.asc"} \\ \text{RESP} & \text{"laser.asc"} \\ \text{XSCALE} & 10^{9} \\ \text{LAST} & -130 \end{pmatrix}$$

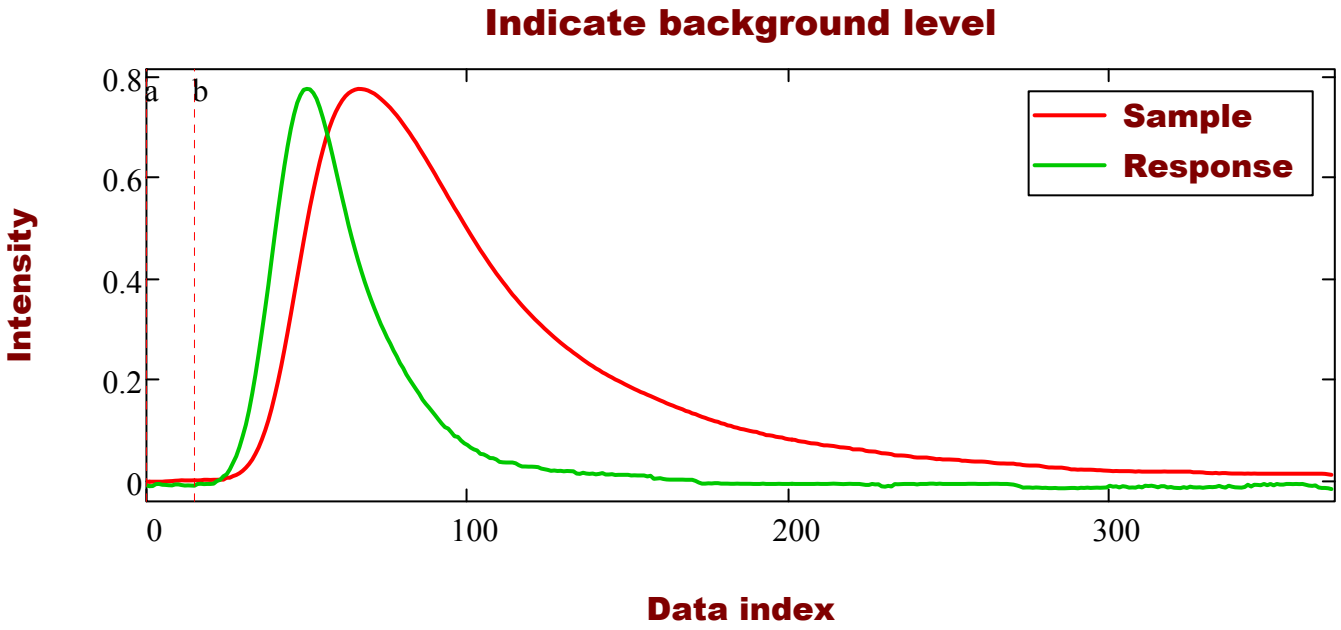
SAMPLE indicates the file containing the signal of the sample being studied
RESP indicates the file containing the instrumental response (e.g. shape of the e
STEP specifies the time step (necessary only if time data was not recorded in th
XSCALE and YSCALE allow a scaling of time and intensity
FIRST and LAST allow removing redundant data points from beginning and end
Click here for more info

Processing

========== Background subtraction ==========

Index range of data for background level: Range := (0 15)

Processing

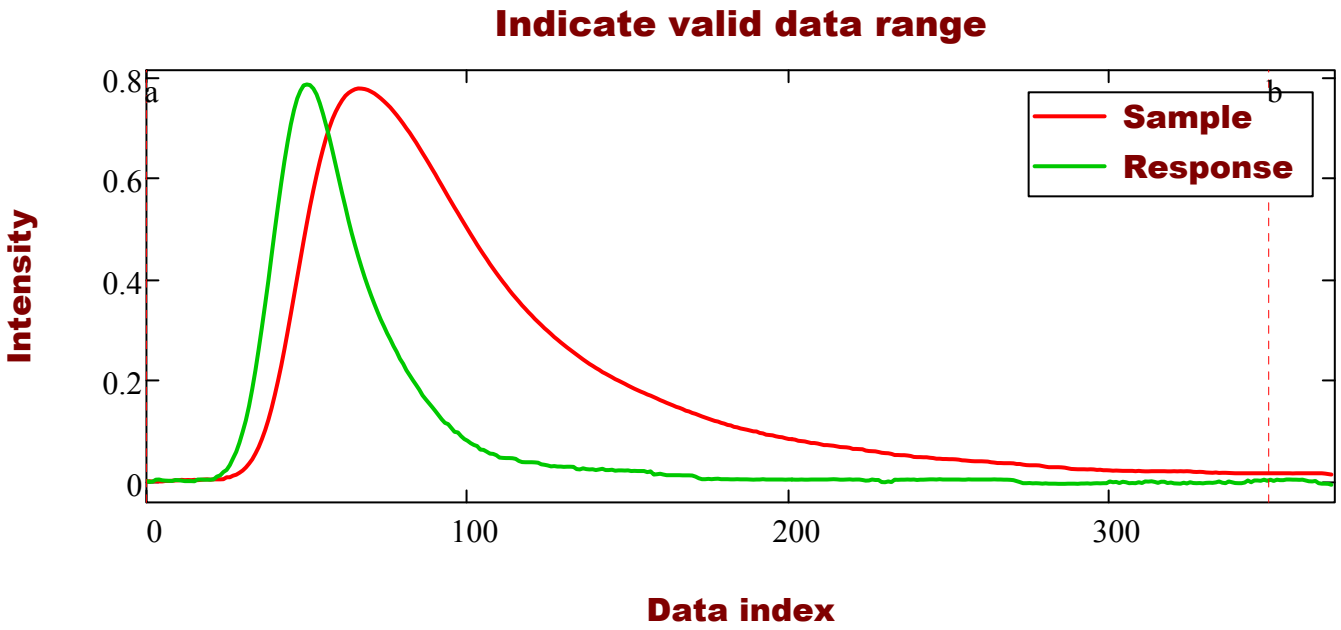


Processing

========== Data range ==========

Index range of valid data: Range := (0 350)

Processing

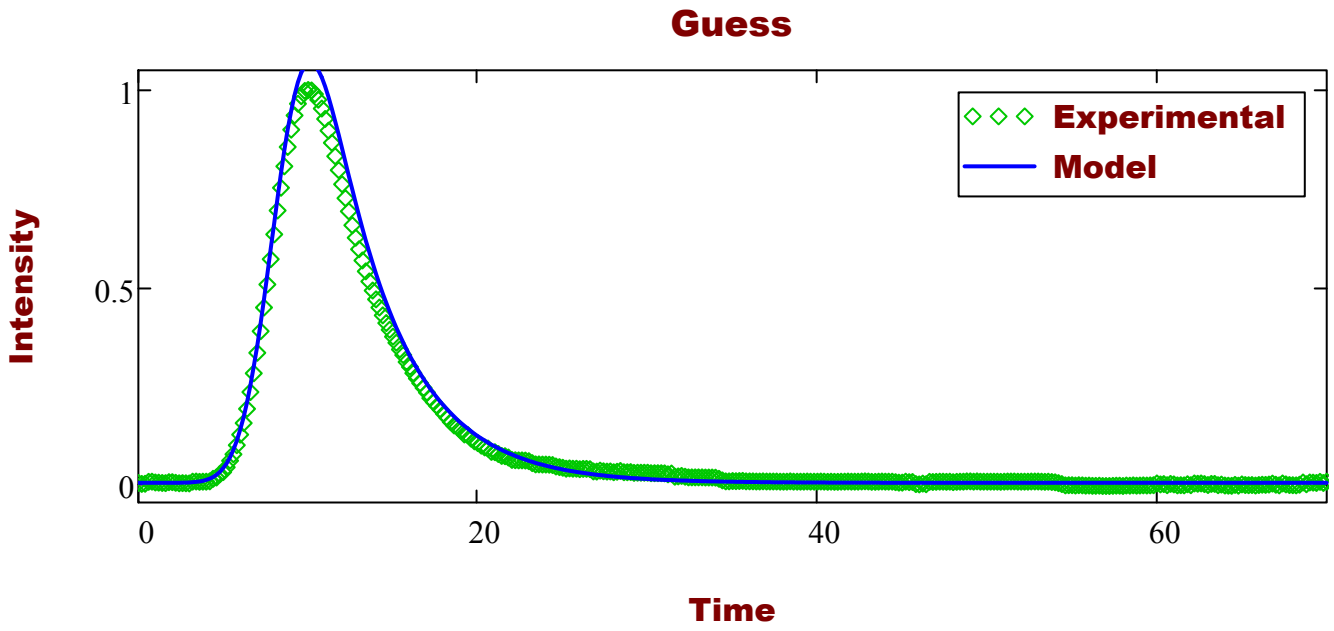


============== Gaussian fit of the response function ==============

$$\text{Guess} := \begin{pmatrix} 8.3 \\ 2 \\ 2.3 \\ 4 \end{pmatrix}$$

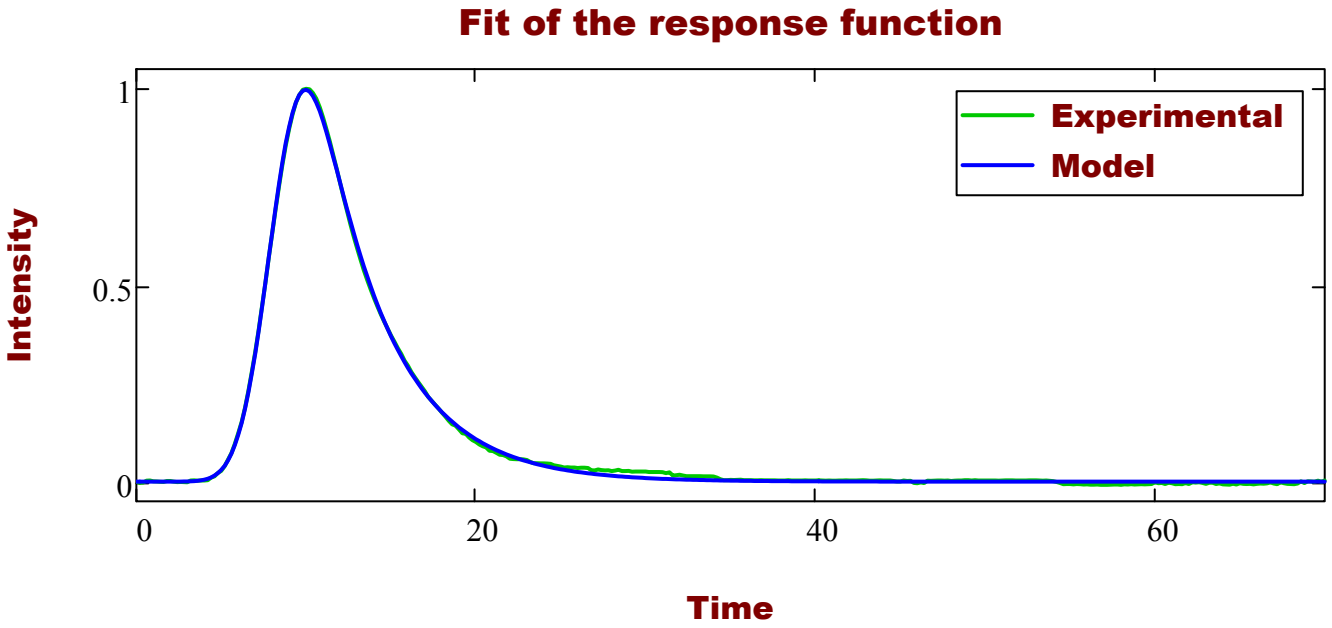
Center position (w/o asymmetry)
Peak intensity (w/o asymmetry)
Width parameter
Asymmetry parameter (set to 0 to disable)
Click here for more info

Processing



FOM = 2.431·%

Processing



FOM = 0.618·%

========== Modeling the decay curve ==========

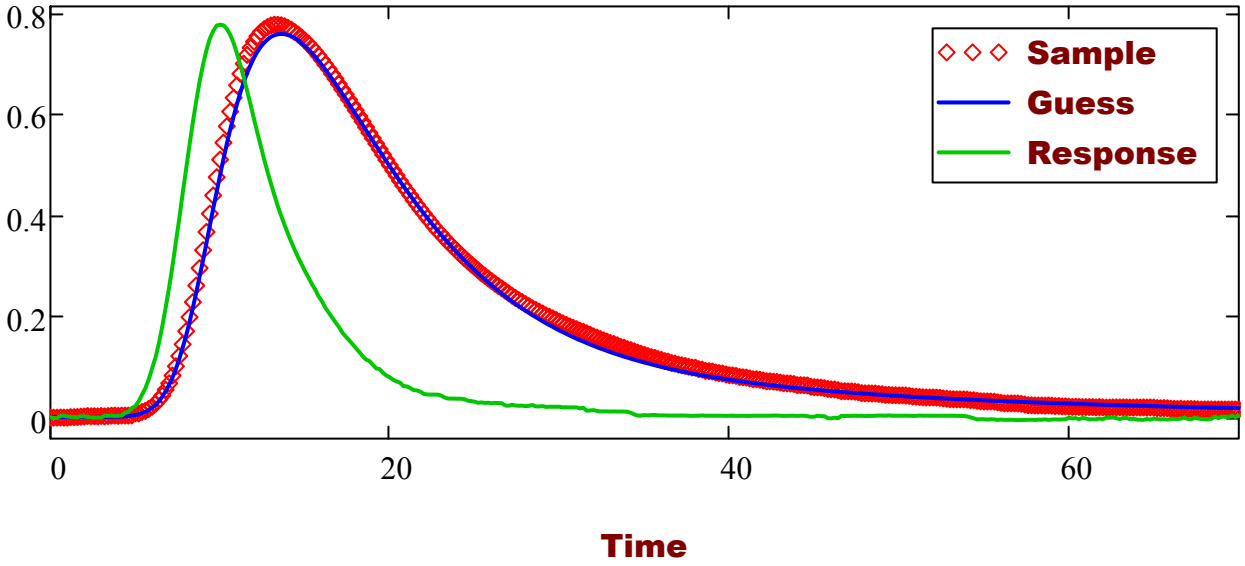
Method := GAUSS

$$\begin{pmatrix} \text{Expon} \\ \text{Fast} \end{pmatrix} := \begin{bmatrix} \begin{pmatrix} 0.22 & 0.024 \\ 5.277 & 24.508 \end{pmatrix} \\ 0 \end{bmatrix}$$

"Expon" specifies the amplitude(s) and time constant(s) of exponential decay
"Fast" indicates the amplitude of the unresolved fast component (zero for no
Click here for more info

Processing

FOM = 1.432·%



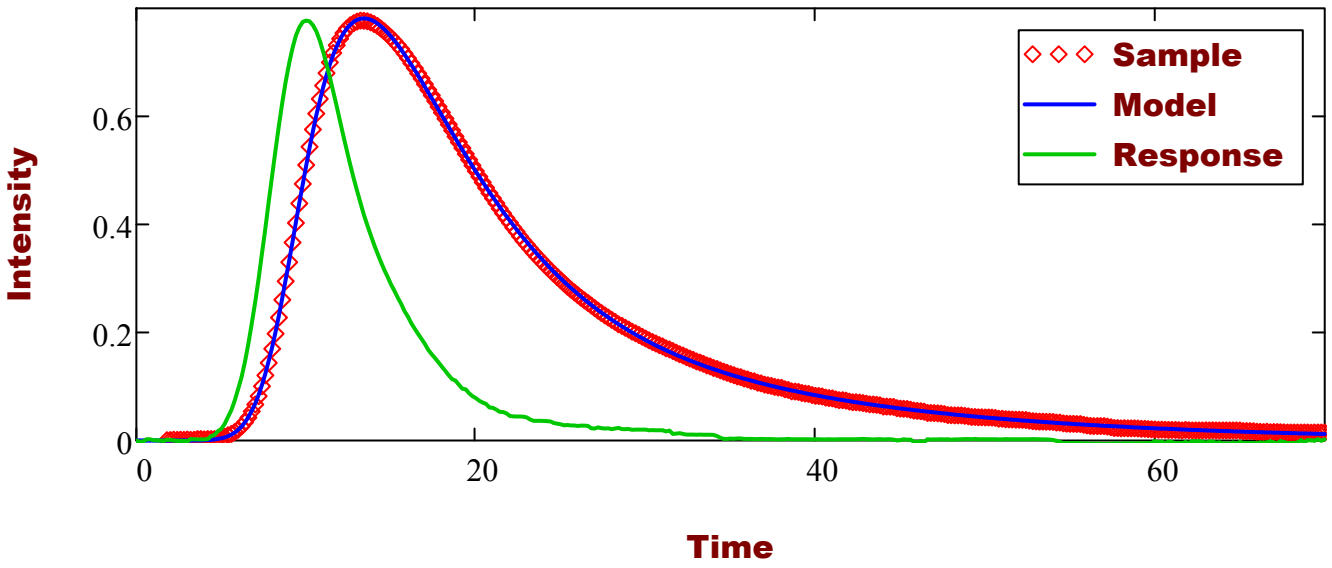
========== Optimization ==========

Processing

$$\text{Optimized} = \begin{bmatrix} \begin{pmatrix} 0.212 & 0.057 \\ 4.047 & 15.97 \end{pmatrix} \\ 0 \end{bmatrix}$$

AverageDecayTime = 10.212

FOM = 0.292·%



Processing

========== End of Program ==========