1 Time-Domain Response

The time domain response is generated by numerical inversion of the transfer function. Two algorithms have been implemented in laplace explorer yet. The Gaver-Stehfest and the week's method. Gaver-Stehfest seems to be a robust and fast algorithm though is unable to process time-shifts accuratly. Week's method is much more complicated and several parameters have to selected correctly to gain over Gaver-Stehfest.

Explanations to Gaver-Stehfest:
`http://www.cs.hs-rm.de/~weber/lapinv/gavsteh/gavsteh.htm`

Explanations to Week's algorithm:
`http://www.cs.hs-rm.de/~weber/lapinv/weeks/weeks.htm`

Gaver-Stehfest is now not available any more.

After creating the time domain response the algorithm can be adjusted. By right-mouse click onto the Curve in the list-view an pulldown-menu opens. By selecting setup, a setup-dialog opens.

2 Week's algorithm

$F(s) = \int e^{-st} f(t) dt$
$Re(s) >= \sigma_0$

$f(t)$ is the inverse Laplace transform of $F(s)$.

2.1 Abscissica (σ_0)

The value σ_0 is referred to as the abscissa of convergence of the Laplace transform; it is the rightmost real part of the singularities of $F(s)$.

So for a stable system σ_0 can be selected $\sigma_0 >= 0$.

2.2 Number of Laguerre expansion coefficients

The number of Coeffizients is specified by 2^p where p has to be selected.

2.3 Evaluation Pos

$F(s+c)$ is evaluated where c has to be selected $c > 0$ for singularities on/right of the imaginary axis.

2.4 Scale Parameter

For bettering the convergence.