

$$\frac{\partial A}{\partial z} = \frac{\alpha}{2} A + \sum \beta_n \frac{\partial^n A}{\partial T^n} + i\gamma \left(1 - f_s \left(1 + \frac{i}{\omega_0} \frac{\partial}{\partial T} \right) \left(A(z, T) \int_{-\infty}^{\infty} R(\tau) |A(z, T - \tau)|^2 d\tau \right) \right)$$

Tutorial 6 B-Integral

This brief tutorial explain the calculation of the B-integral as an example of what can be done with the measured data recorded along a propagation.



$$\frac{\partial A}{\partial z} = \frac{\alpha}{2} A + \sum_{m=2}^{\infty} \beta_m \frac{1}{m!} \frac{\partial^m A}{\partial T^m} + i \gamma \cdot (1 - f_s) \left(1 + \frac{i}{\omega_0} \frac{\partial}{\partial T} \right) A(z, T) \int_{-\infty}^{\infty} R(\tau) |A(z, T - \tau)|^2 d\tau$$

Select the standard pulse and propagation



Open the create pulse dialog (Main/Create)



Press OK.

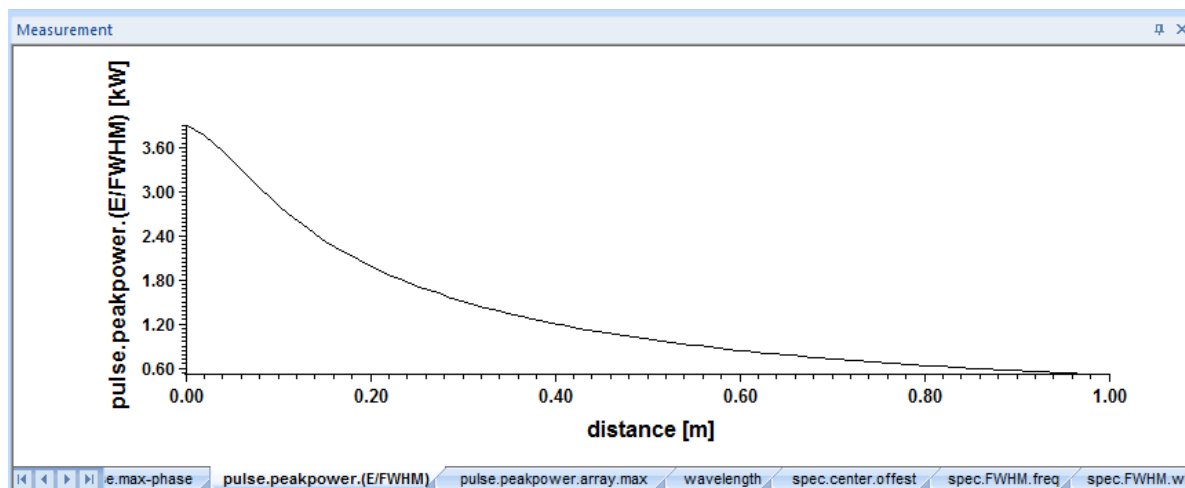


Choose the option [record measurement] and Start the propagation.

$$\frac{\partial A}{\partial z} = \frac{\alpha}{2} A + \sum \beta_n \frac{1}{n!} \frac{\partial^n}{\partial T^n} A + i\gamma (1 - f_s) \left(1 + \frac{i}{\omega_0} \frac{\partial}{\partial T} \right) A(z, T) \int_{-\infty}^{\infty} R(\tau) |A(z, T - \tau)|^2 d\tau$$

Export measure data and calculate

In the measurement window, select [pulse.peakpower(E/FWHM)]. Double click the graph to copy it to the clipboard.



Paste the values in e.g. MS Excel, sum all values of peakpower (second column) and multiply by gamma (can be found in the propagation window) and dz (step size).

That will give you the B-integral, as it is defined as:

$$B = \gamma \int_0^L P_{Peak}(z) dz$$

For this example B=1366.