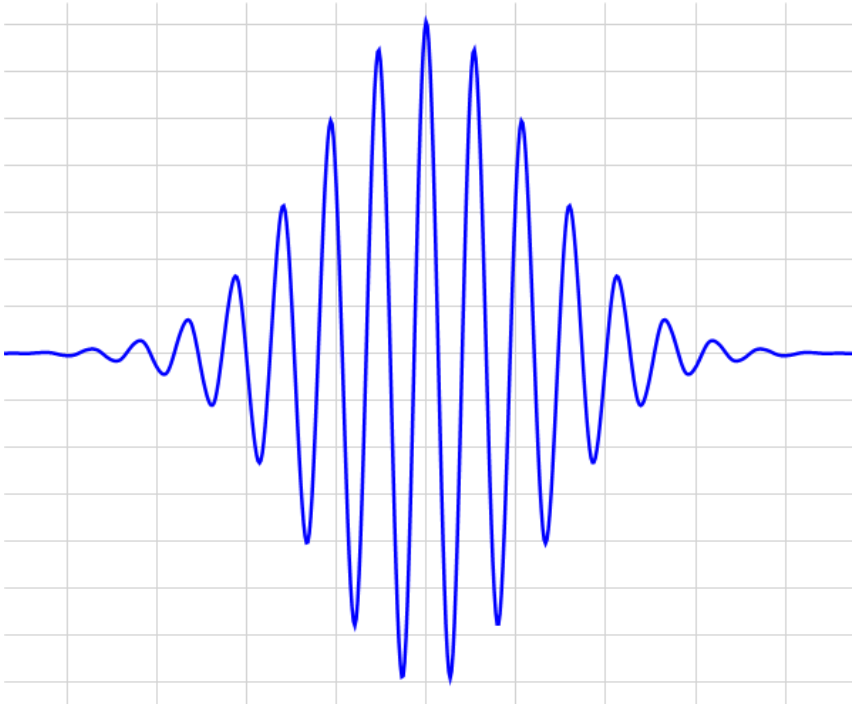
LightTrans

Femtosecond Pulse Propagation Through Dispersive Seawater

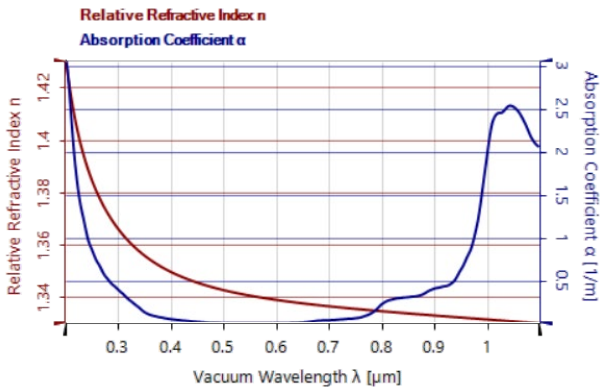
Abstract



Ultrashort pulses with time duration of the order of femtosecond, have broad spectral band. They enable many applications due to their short time duration. But on the other hand, it is not trivial to maintain the ultrashort time duration after propagating through dispersive materials. As an example, the propagation of a 5-fs pulse through seawater is studied in VirtualLab Fusion. The broadening of the pulse and the change in its temporal profile are shown.

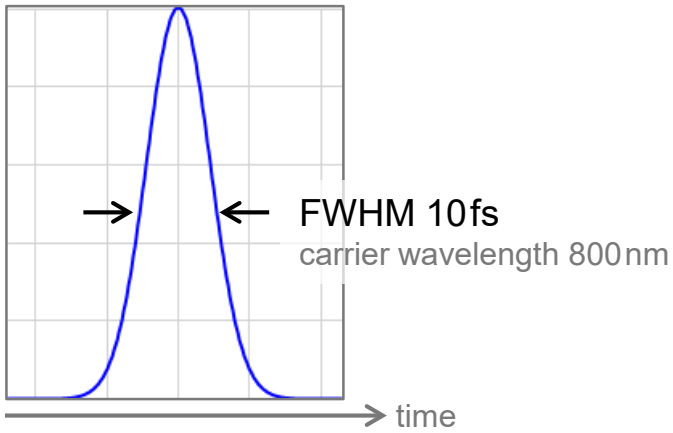
Modeling Task

dispersion property of the embedding medium (seawater)



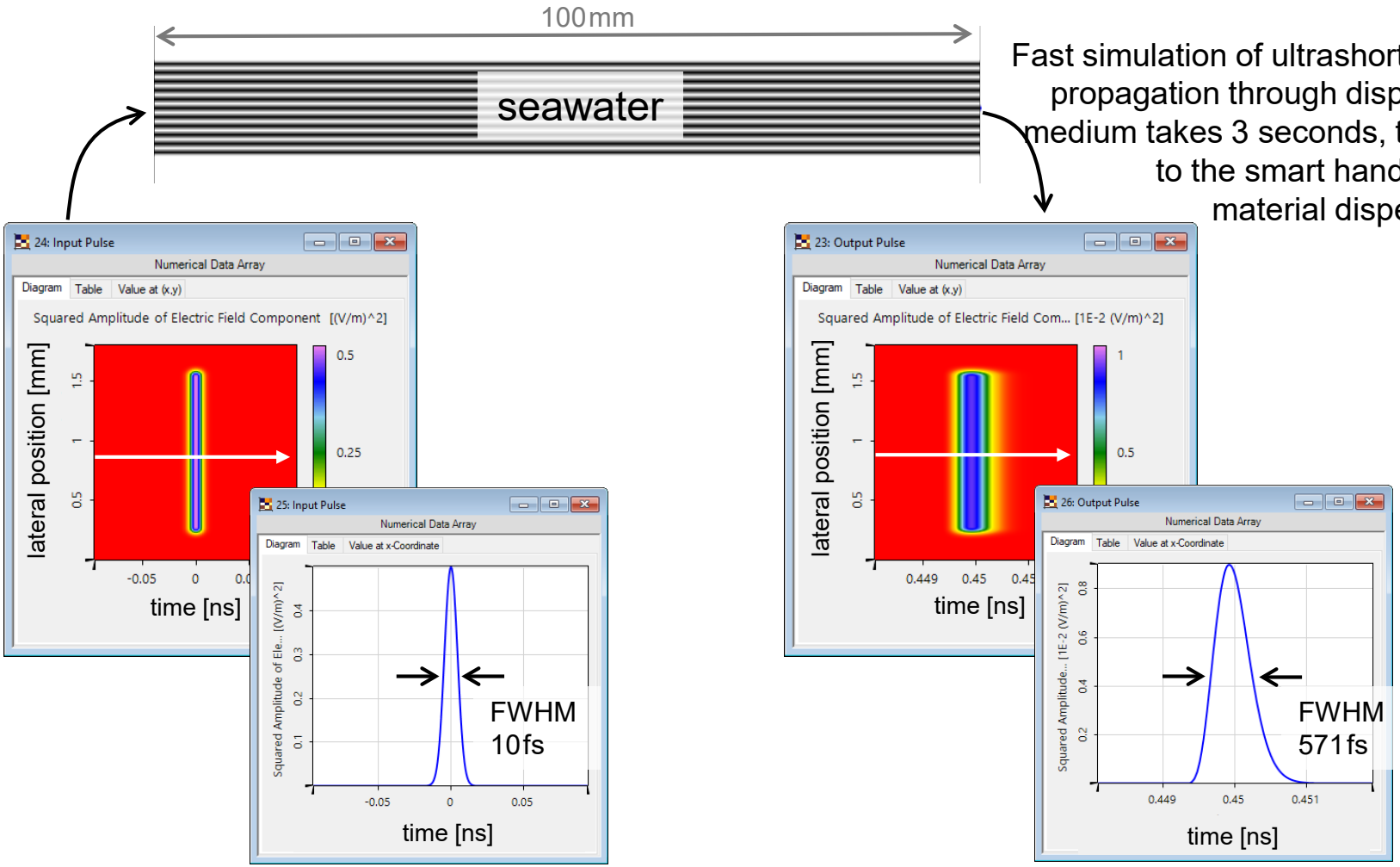
detector

input pulse envelop



How to calculate the temporal profile of the output pulse, after propagating through a dispersive medium?

Results



Fast simulation of ultrashort pulse propagation through dispersive medium takes 3 seconds, thanks to the smart handling of material dispersion.

Document Information

title	Femto-second Pulse Propagation through Dispersive Seawater
version	1.0
VL version used for simulations	7.3.1.5
category	Application Use Case