

## **DRTS METHOD FOR LIGHT PROPAGATION: IMAGING WITH SCATTERED PHOTONS FROM THE CONTINUOUS TO ULTRAFAST PULSE REGIMES**

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**ABSTRACT.** In this study the capabilities of the Dynamic Radiative Transfer System (DRTS) are shown, both for expressing the temporal and spatial behavior of photon propagation, and most importantly for imaging through optically complex turbid media. A light-beam with linear-shaped source profile was employed and pulse durations ranging from the continuous down to the ultra-fast regime were studied. By further applying simple intensity-normalization processing, clean images of the embedded objects can be extracted. Additionally, the pulse evolution through the medium can be traced and displayed in time-frame sequence, depicting the gradual image formation and fading. The results can be directly applicable in a variety of scientific and technological fields from tumor detection biological tissues to atmospheric and underwater imaging in strongly diffusive media.