1. Record Nr. UNINA9910571731203321 Autore Pattelli Lorenzo Titolo Imaging light transport at the femtosecond scale: a walk on the wild side of diffusion / / Lorenzo Pattelli Pubbl/distr/stampa Florence:,: Firenze University Press,, 2018 Descrizione fisica 1 online resource (150 pages) Collana Premio Tesi di dottorato Disciplina 530.15 Soggetti Mathematical physics - Problems, exercises, etc Mathematical physics - Data processing Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Sommario/riassunto Paper, milk, clouds and white paint share a common property: they are opaque disordered media through which light scatters randomly rather than propagating in a straight path. For very thick and turbid media, indeed, light eventually propagates in a 'diffusive' way, i.e. similarly to how tea infuses through hot water. Frequently though, a material is neither perfectly opaque nor transparent and the simple diffusion model does not hold. In this work, we developed a novel optical-gating setup that allowed us to observe light transport in scattering media with sub-ps time resolution. An array of unexplored aspects of light propagation emerged from this spatio-temporal description, unveiling transport regimes that were previously inaccessibile due to the extreme

time scales involved and the lack of analytical models.