Photoacoustic, Light-Speed, and Quantum Imaging

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CILSE
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Abstract:

Lihong Wang, PhD, and team developed photoacoustic tomography (PAT) for deep-tissue imaging, offering in vivo functional, metabolic, molecular, and histologic imaging from organelles to entire organisms. Applications include early cancer detection and brain imaging. Additionally, they developed light-speed compressed ultrafast photography (CUP), capable of capturing the fastest phenomena, such as light propagation, in real time. CUP, with a single exposure, captures transient events on femtosecond scales. Lastly, their research extends to quantum entanglement for imaging, utilizing Heisenberg scaling to enhance spatial resolution linearly with the number of quanta, outperforming the standard quantum scaling's square-root improvement.

Biography:

Lihong Wang is Bren Professor of Medical and Electrical Engineering at California Institute of Technology. He has published 605 peer-reviewed journal articles and delivered 620 keynote/plenary/invited talks. He is #1 most cited scientist in optics and #4 in nuclear medicine and medical imaging according to Stanford/Elsevier. He has received prestigious awards from NIH, Optica, IEEE, SPIE, and more. He is also a Fellow of AAAS, AIMBE, Electromagnetics Academy, IAMBE, IEEE, NAI, Optica, and SPIE. Furthermore, an honorary doctorate was conferred on him by Lund University, Sweden. Lastly, he was inducted into the National Academy of Engineering.