

Recent progress in Optical Transfer Matrix:

A tribute to late Professor Teruji Ose

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In this talk, we will review our recent work on the Optical Transfer Matrix (OTM). As frequency analysis of polarization imaging system, OTM is not only useful for the design of polarization-related optical system also valuable to characterize manufactured systems since it specifies how different spatial frequencies are captured and/or transmitted in the optical transmission chain. Based on the auto-correlation of the generalized pupil matrix of the optical system, we provide some examples to demonstrate how the OTM can be calculated numerically when different types of aberrations appear in the system. Furthermore, we also introduce and demonstrate two approaches of OTM measurement with the aid of extended test objects.

All the techniques introduced here can be considered as our home-style fermentation of the knowledge which we learned from late Professor Teruji Ose, who had devoted his whole life to the study of the Optical Transfer Function (OTF). Therefore, we feel much honored to have this chance to give our tribute to Prof. Ose for his early guidance, stimuli and encouragements in the course of this research and for the great efforts he had already made to promote Sino-Japanese scientific exchange at the early age of the reform and opening-up in China.

Short biography:



Wei Wang received his PhD with Summa Cum Laude from University of Electro-Communications (Japan) and DSc from University of Science and Technology of China. He is currently working at Heriot-Watt University (UK) and taking adjunct professor position at Xian Tech. Univ.. He is a Fellow of Higher Education Academy, Senior Member of SPIE and OSA. His research interests and expertise are optical signal processing, statistical optics, polarization optics and optical metrology and sensing. He has contributed 4 book chapters, published more than 80 articles in peer reviewed journals and delivered more than 150 talks in international conferences.