Apr 9th, 9:00 AM - 10:00 AM

Comparison of Aberration Correction Methodologies

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Poster Presentation P13

COMPARISON OF ABERRATION CORRECTION METHODOLOGIES

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We began the term by re-designing a complex optical system, so as to minimize the number of elements required, while at the same time adding a pair of acousto-optic deflectors (AODs) to the existing system, which included a Spatial Light Modulator (SLM) and a research-grade fluorescence microscope. For every element added to the optical path there is some amount of insertion loss (i.e., a reduction in the transmitted intensity). So, in part, the reduction in the number of optical elements was aimed at reducing the integrated insertion loss. Also of great significance, for our application, is the need to reduce the overall aberration present in the system. Our goals for the immediate future are to assess the effectiveness of (and trade-offs associated with) several independent techniques for aberration correction, including one of our own design. We have worked together to develop and incorporate original code for manipulation of the active elements in this system, as will be demonstrated in the talk.