



Illinois Wesleyan University Digital Commons @ IWU

John Wesley Powell Student Research
Conference

2011, 22nd Annual JWP Conference

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

Comparison of Aberration Correction Methodologies

Patrick Dahl

Illinois Wesleyan University

Carl Mueller

Illinois Wesleyan University

Nathanial Wolanyk

Illinois Wesleyan University

Evan Baker

Illinois Wesleyan University

Gabriel Spalding, Faculty Advisor

Illinois Wesleyan University

Follow this and additional works at: <http://digitalcommons.iwu.edu/jwprc>

 Part of the [Physics Commons](#)

Patrick Dahl; Carl Mueller; Nathanial Wolanyk; Evan Baker; and Gabriel Spalding, Faculty Advisor, "Comparison of Aberration Correction Methodologies" (April 9, 2011). *John Wesley Powell Student Research Conference*. Paper 7. <http://digitalcommons.iwu.edu/jwprc/2011/posters/7>

This Event is brought to you for free and open access by The Ames Library, the Andrew W. Mellon Center for Curricular and Faculty Development, the Office of the Provost and the Office of the President. It has been accepted for inclusion in Digital Commons @ IWU by the faculty at Illinois Wesleyan University. For more information, please contact digitalcommons@iwu.edu.

©Copyright is owned by the author of this document.

Poster Presentation P13

COMPARISON OF ABERRATION CORRECTION METHODOLOGIES

Patrick Dahl, Carl Mueller, Nathaniel Wolanyk, Evan Baker and Gabriel Spalding*
Physics Department, Illinois Wesleyan University

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.