



## Branch Point Mitigation of Thermal Blooming Phase Compensation Instability

---

By Mark F. Spencer

Biblioscholar Nov 2012, 2012. Taschenbuch. Book Condition: Neu. 246x189x16 mm. This item is printed on demand - Print on Demand Neuware - Thermal blooming can have a major impact on high-energy laser (HEL) beam propagation in the atmosphere. In theory, an adaptiveoptics (AO) system can mitigate the nonlinear optical effects induced by thermal blooming; however, when a single deformable mirror is used for phase-only compensation, analysis predicts the possibility of instability. This instability is appropriately termed phase compensation instability (PCI) and arises with the time-dependent development of spatial perturbations found within the HEL beam. These spatial perturbations act as local hot spots that produce negative-lens-like optical effects in the atmosphere. An AO system corrects for the hot spots by applying positive-lens-like phase compensations. In turn, this increases the strength of the thermal blooming and leads to a runaway condition, i.e. positive feedback in the AO control loop. This study uses a series of computational wave-optics experiments to explore the conditions for insipient PCI. Horizontal propagation is modeled with the effects of extinction, thermal blooming, and turbulence for a focused Gaussian beam. In addition, a nominal AO system is used for phase compensation from a point source beacon. Results show that...

DOWNLOAD



READ ONLINE  
[ 3.3 MB ]

### Reviews

*Very useful to all of category of people. I actually have read through and that i am sure that i will likely to go through once more again in the foreseeable future. I realized this book from my i and dad advised this publication to find out.*  
-- **Alta Kirlin**

*This is the very best publication i have got read until now. It is definitely simplified but shocks within the fifty percent of the pdf. You may like how the article writer create this pdf.*  
-- **Rosario Durgan**