

## **Laser beam analysis, propagation, and spatial shaping techniques**

James R. Leger, *Univ. of Minnesota, USA*

### Short phrase description

Quantifying, calculating, and controlling the properties of a light field.

### Benefits and Learning Objectives

This course will enable participants to:

- measure the quality of a laser beam using several methods
- interpret the meaning of various laser specifications
- understand Gaussian laser beam properties from an intuitive standpoint
- predict the propagation and focusing properties of non-ideal and aberrated laser beams
- determine the concentration limits of a light field
- design optimal beam concentration optics
- compare different beam profiles for specific applications and calculate ideal performance
- design beam shaping optics using polarization and phase manipulation

### Intended Audience

This course is designed to provide laser engineers, optical system designers, and technical management professionals with a working knowledge of laser beam characterization, analysis, and modification. Physical and intuitive explanations of most topics are designed to make the concepts accessible to a wide range of participants.