

# 2023 African Light Source Conference



Contribution ID: 96

Type: **not specified**

## Freely Available Complete Video Optics Course

Wednesday, 15 November 2023 11:45 (15 minutes)

Freely Available Complete Video Optics Course

Rick Trebino

Georgia Institute of Technology, School of Physics  
Atlanta GA 30332 USA  
rick.trebino@physics.gatech.edu  
frog.gatech.edu

### 1. Re-inventing the Lecture

Despite the great technological advances of the past few decades, lecture preparation remains a time-consuming task, performed mostly in isolation with only the assistance of a textbook. Worse, the resulting talking head in front of a chalk-filled blackboard continues to fail to inspire students worldwide. Fortunately, technology now allows for the possibility of creating exciting video lectures with full-color images, animations, and movies. Unfortunately, creating such lectures is even more time-consuming, so it is rarely done, and PowerPoint lectures are often singularly uninspired and so have a much-deserved terrible reputation. However, once created, high-quality, appealing, exciting, even fully narrated PowerPoint lectures can easily be shared, significantly reducing teacher preparation time and vastly increasing the quality and excitement of the lecture.

While various web sites distribute educational applets and images, which is helpful, they only partially solve the problem; these are mere elements of something bigger and much more time-consuming. Other web sites offer video recordings of talking-head lectures, which, unfortunately, are dull and uninspiring. Others charge fees. So, for the past two decades, I have been devoting considerable time developing highly polished, full-color, complete, fully narrated courses of PowerPoint lectures for four college-level optics and physics courses, complete with pictures, movies, animations, and derivations (of which, Optics and Modern Physics are fully, essentially professionally narrated). They also borrow images and movies from numerous other (properly cited) sources. And I freely distribute these entire courses (at [frog.gatech.edu](http://frog.gatech.edu)). Figure 1 shows still images of several (actually highly animated) slides from these lectures. These courses are fully self-contained and can completely replace live lectures. The students watch them at their leisure (for a flipped classroom), or the videos can be played in class, pausing occasionally for discussion. Either way, the required effort by the teacher is minimal, and the result is a vast improvement over the traditional chalk-and-talk, talking-head lecture.

See pdf for figure.

Fig. 1. Sample slides from Rick Trebino's optics course. Reprinted with permission by Rick Trebino ([frog.gatech.edu](http://frog.gatech.edu)).

**Primary author:** TREBINO, Rick (Georgia Institute of Technology)

**Presenter:** TREBINO, Rick (Georgia Institute of Technology)

**Session Classification:** Partner

**Track Classification:** Partner