CODE V Assignment #3

In the last assignment you designed a digital camera lens that met certain minimum performance specifications. The main quantitative value that was used to determine the image quality of the lens system was the Modulation Transfer Function. The MTF indicates contrast (how much the image is blurred) as a function of spatial frequency. You were able to achieve acceptable MTF without too much work because you started with a previously optimized lens and made some subtle changes to its properties.

In this assignment, you will run an optimization procedure on the lens that you designed in the previous assignment to get its MTF as close to one (perfect) as possible. This means that you need the lens file from assignment 2. If you did not save it, then you need to redesign it. Don't worry, it won't take long and going over the steps another time will help you. From now on, save your work somewhere. Either put your files on a USB drive or email them to yourself. The computers in the PLR are periodically refreshed, so do not save files on the hard drive (you can save the files temporarily, but don't expect them to be there the next day.) Before you get started on this assignment, make some notes about the MTF for this lens design, since it will change (hopefully for the better) and you will want to compare your optimized results with your what you started with.

This assignment is based on a tutorial in the CODE V help menu. To access the tutorial, open CODE V. Under the help menu, click on CODE V Online Reference Manual. Now click on Introductory User's Guide. A PDF document should open. This assignment covers pages 43-75 of this document.

Follow the steps laid out in the tutorial, making notes as you go along. There is a lot of information in this tutorial about how the AUTO optimization procedure works. In your own words, describe how this works, what steps are involved, and how to interpret what has changed. Compare the MTF of your optimized lens with what you measured at the end of assignment 2.