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***Zoom lenses based on variable power optics***

I want to investigate and simulate the performance of a four element zoom lens system based on variable power optics. A zoom lens is a lens with variable power that changes its field of view while maintaining its focus at a fixed position. So in this project we will monitor the performance of the zoom lens system in terms of its zoom ratio and field of view. In particular we are interested in small format zoom lenses, with potential applications for cell phone cameras, binoculars or other optical instruments. I worked on a two lens system and then proceeded to a bigger three lens system under the guidance of Professor David L. Dickensheets. In this project, I would like to carry on my research of the zoom lenses to a 4 lens system. A four lens system would naturally introduce more system parameters. So with more parameters, I would expect to achieve a higher zooming with respect to the same field of view and similarly a higher field of view with respect to the same zoom ratio I achieved with a three lens system. To make a person with no knowledge in optics understand the compromise between the zoom ratio and the field of view, I would have to be creative in the way I would represent them in plots. I will meet up with my faculty sponsor frequently in order to get this project finished by the deadline and set deadlines for every task that I will break up my project into. All in all this should be a challenging project and I will thoroughly enjoy working on it.