The Flexible Optics Model: Lenses and Mirrors with Variable Focal Length

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The Flexible Optics Model research presents an alternative in developing optical systems with variable focal distance, which instead of using more lenses that change distance between them, in order to change the total focal length of the system, they modify their curvatures. This model can have many applications from cameras to telescopes and microscopes. The advantage is that these systems offer a larger range of focal distances and it has reduced dimensions than normal optics. Using this theoretical model I developed magnifiers, eyepieces and mirrors that I tested and I obtained similar quality as the normal optical systems. The difference is that the ones build by me have a focal length range from infinity to the order of centimeters. I tested the variable focal length eyepieces with a small telescope and as on the normal bought eyepiece I was able to see Jupiter and its satellites, however, because of the focal variation I was able to change the focal view and to see the planet bigger or smaller without changing many eyepieces with fixed parameters. The human world is developed around light and improved optics means having a better perspective in studying everything we see, from the pictures of our friends and family to the distant universe outside Earth that we see with the ground and space telescopes.

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