

Physics II

Optical Aberrations

Problem 1.- Chromatic aberration is due to dispersion of the indexes of refraction in lenses for different wavelengths (colors). How can we avoid this problem?

- a) Using parabolic lenses instead of spherical
- b) Using mirrors instead of lenses
- c) Coating the surface of the lens with anti-reflecting films
- d) Using polarized light

Problem 2.-

- a) How do you avoid chromatic aberration in a microscope?
- b) How would you avoid spherical aberration in a telescope?

Problem 3.- What would you suggest to avoid chromatic aberration when designing a telescope.

Problem 4.- Explain a possible reason to use two lenses, one positive and one negative as the objective of a telescope instead of just one lens.

Problem 5.- Explain a possible reason to use a sodium lamp in a microscope, instead of white light.