

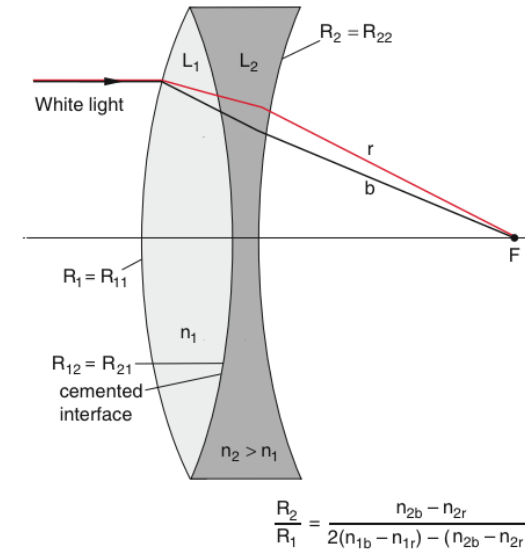
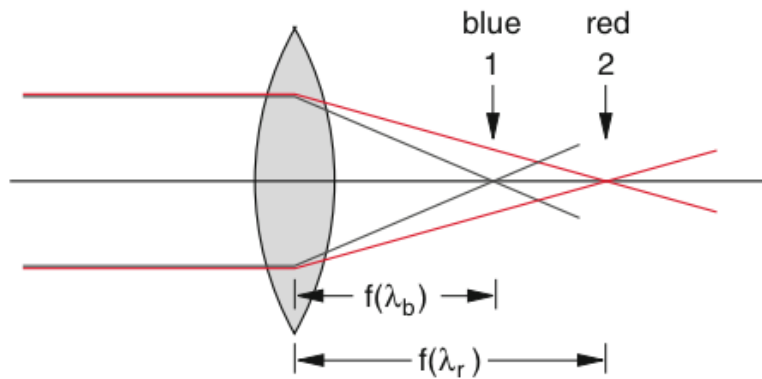
# Experimental Physics 3 - Em-Waves, Optics, Quantum mechanics

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## Lecture 6

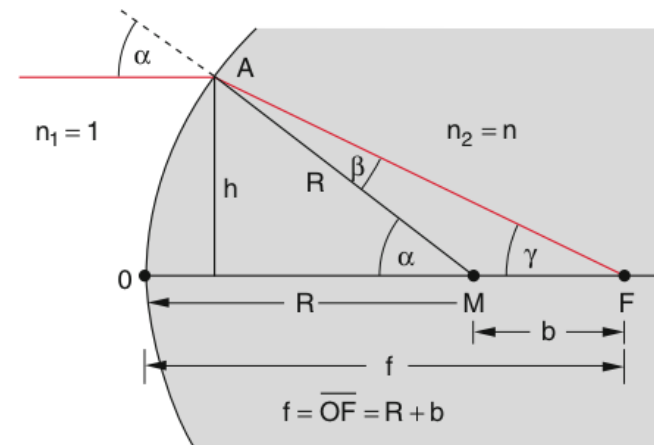
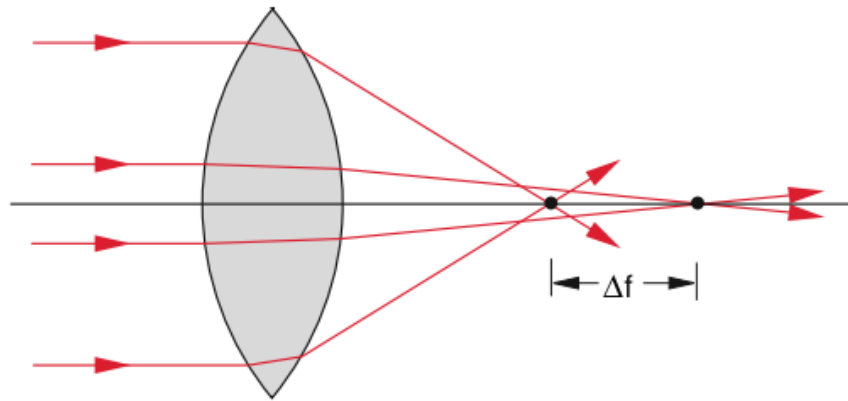
Aberrations

# Chromatic Aberration



Refractive index depends on the wavelength of light

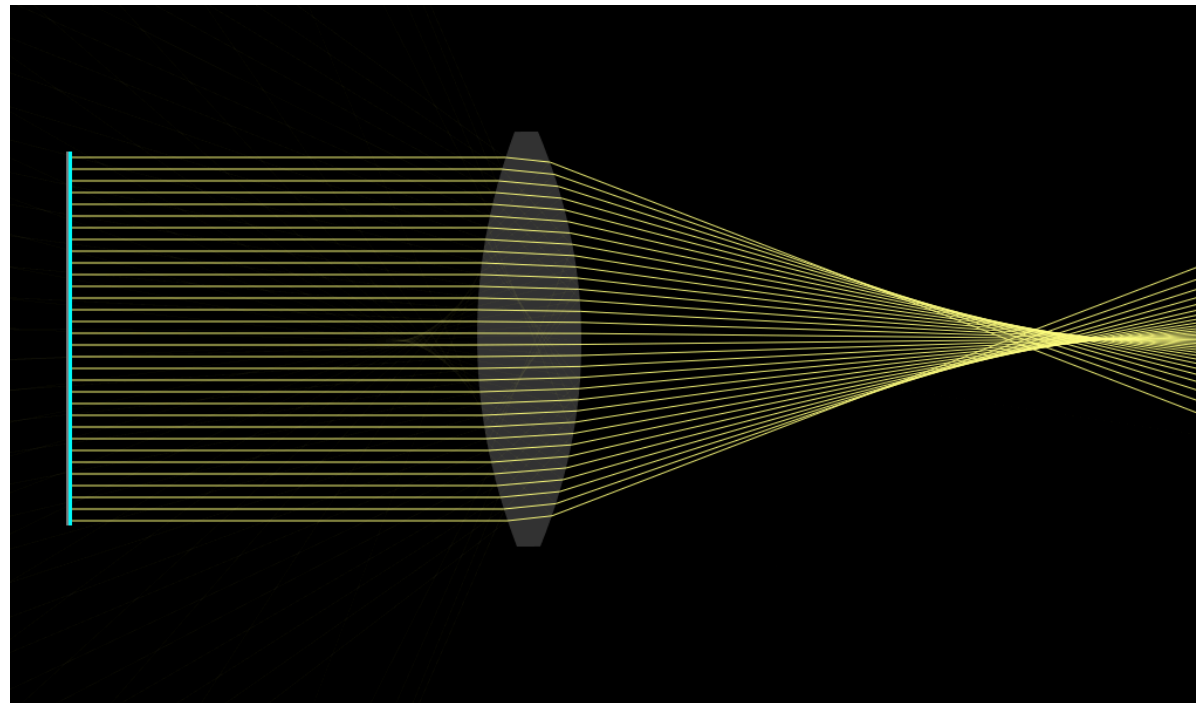
# Spherical Aberration



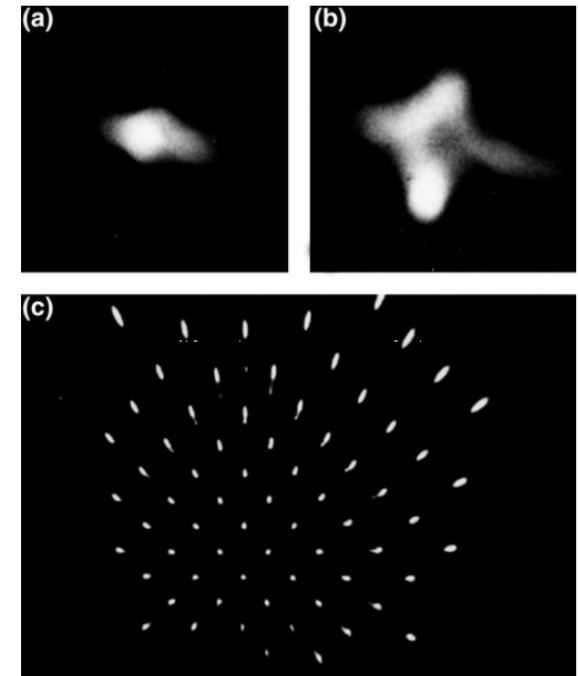
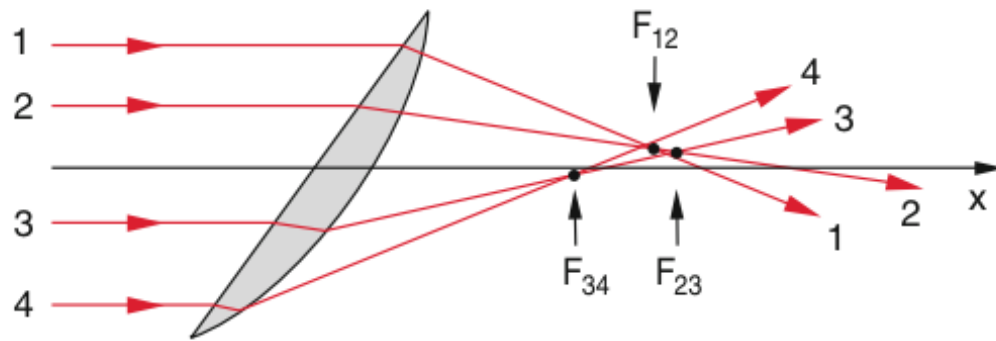
parallel rays more distant from the optical axis  
have a shorter focal distance on spherical surfaces

# Spherical Aberration

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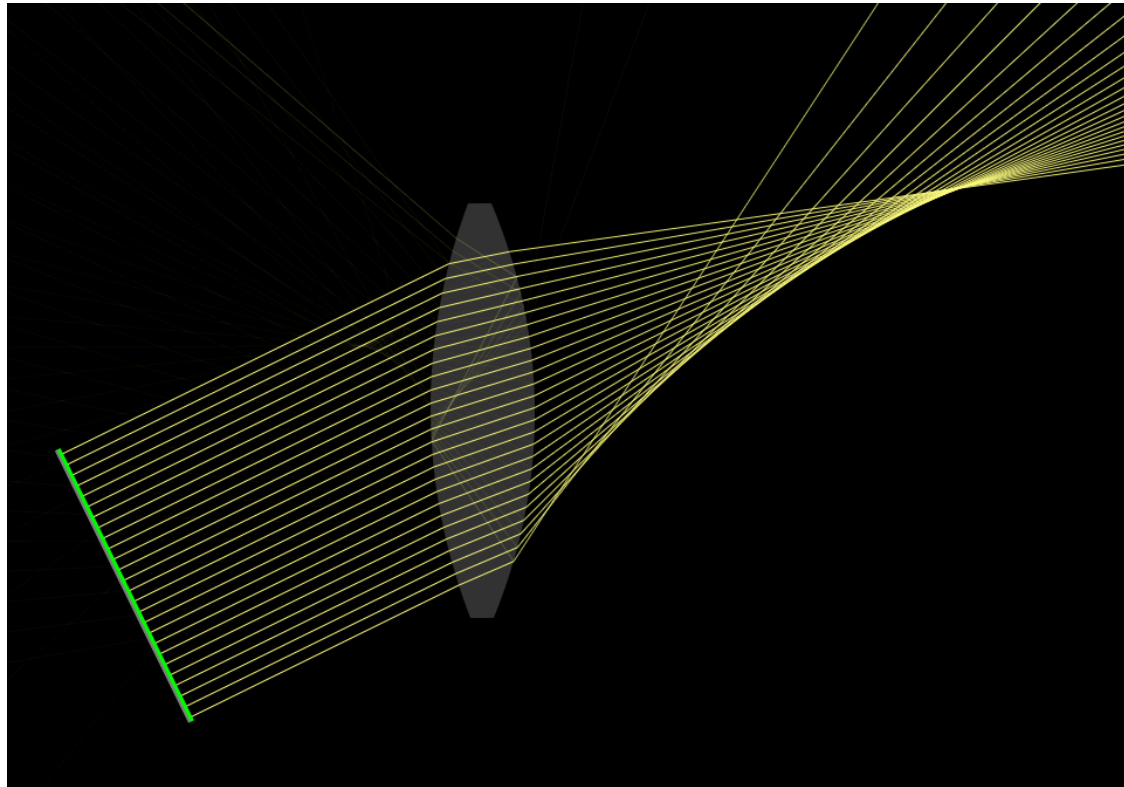
# Coma



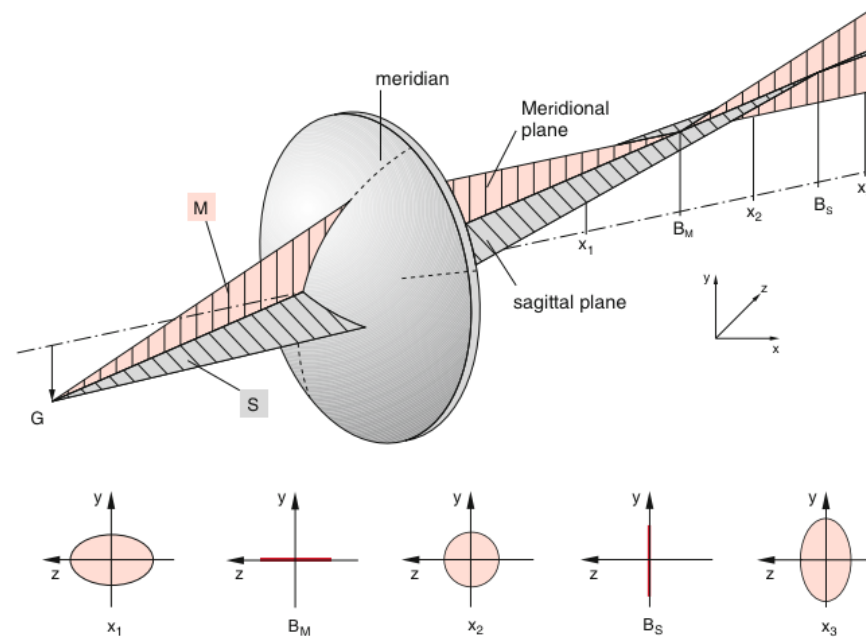
Skew light is not focused into a single point

# Coma

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# Astigmatism



Off axis point sources do not focus into a single point



# Field Curvature

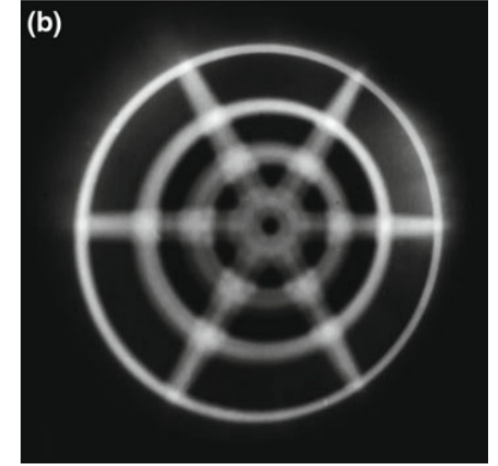
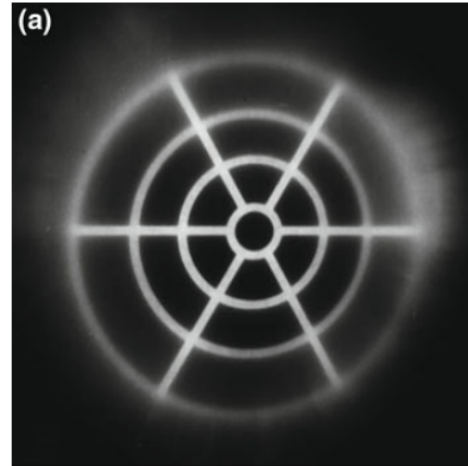
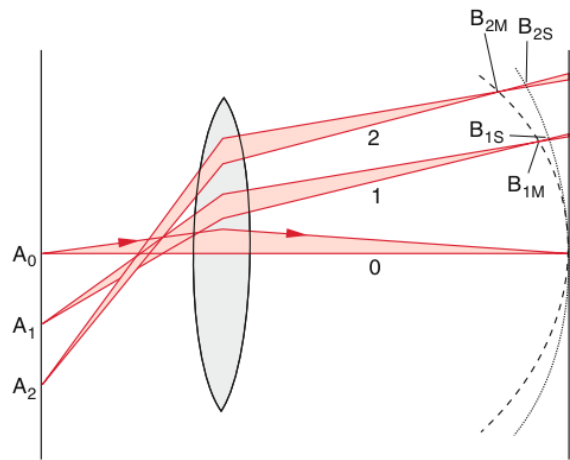
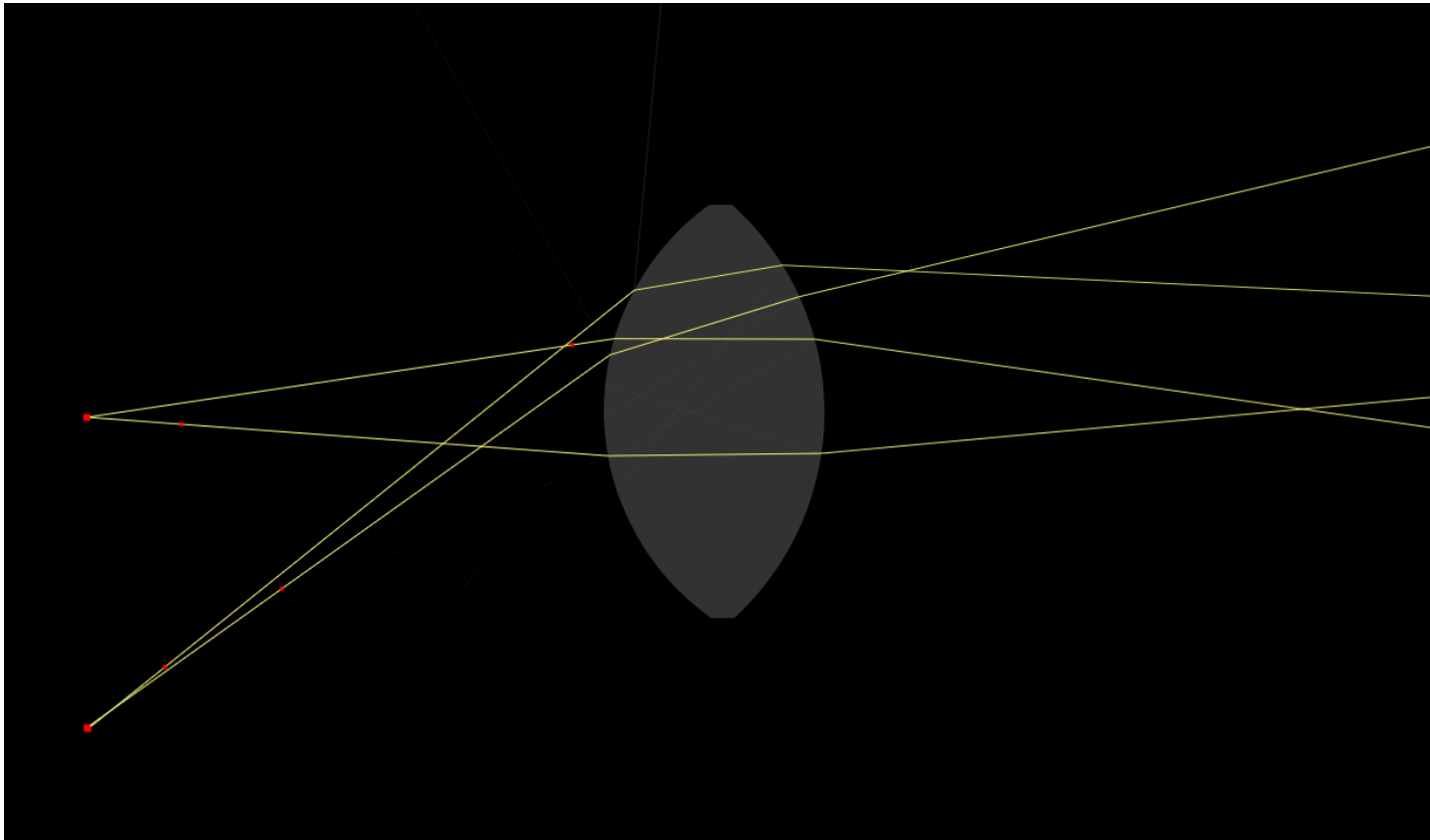


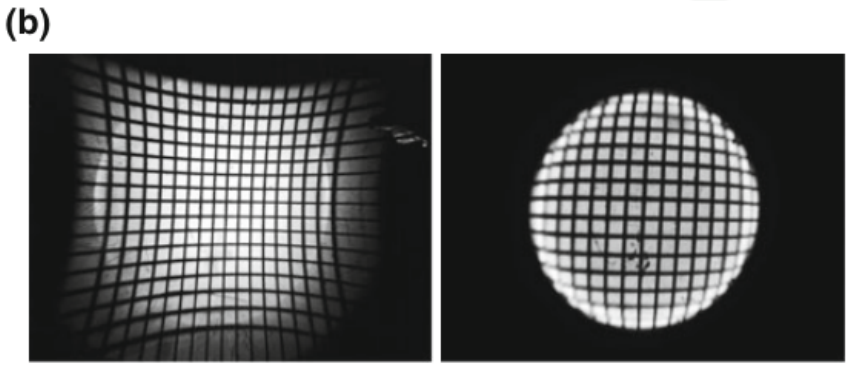
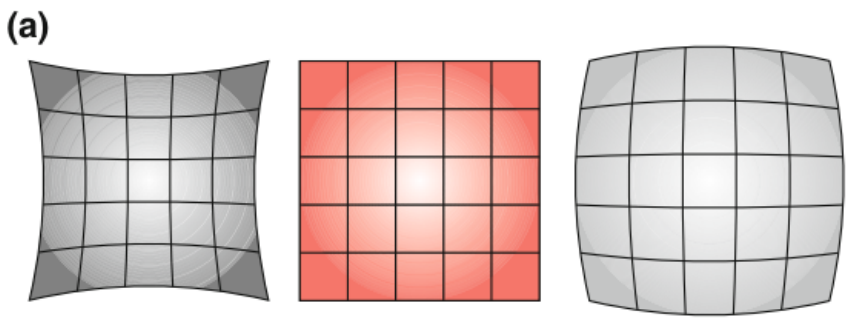
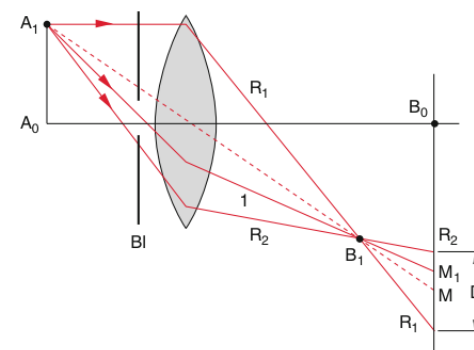
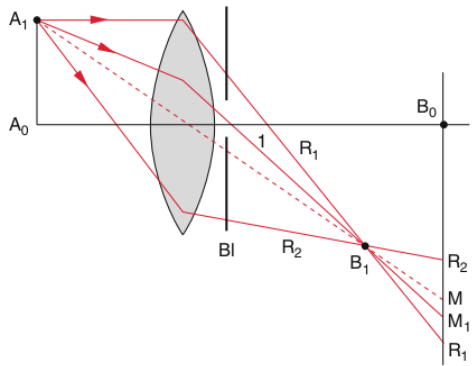
Image plane for the object plane is no longer a plane

# Field Curvature

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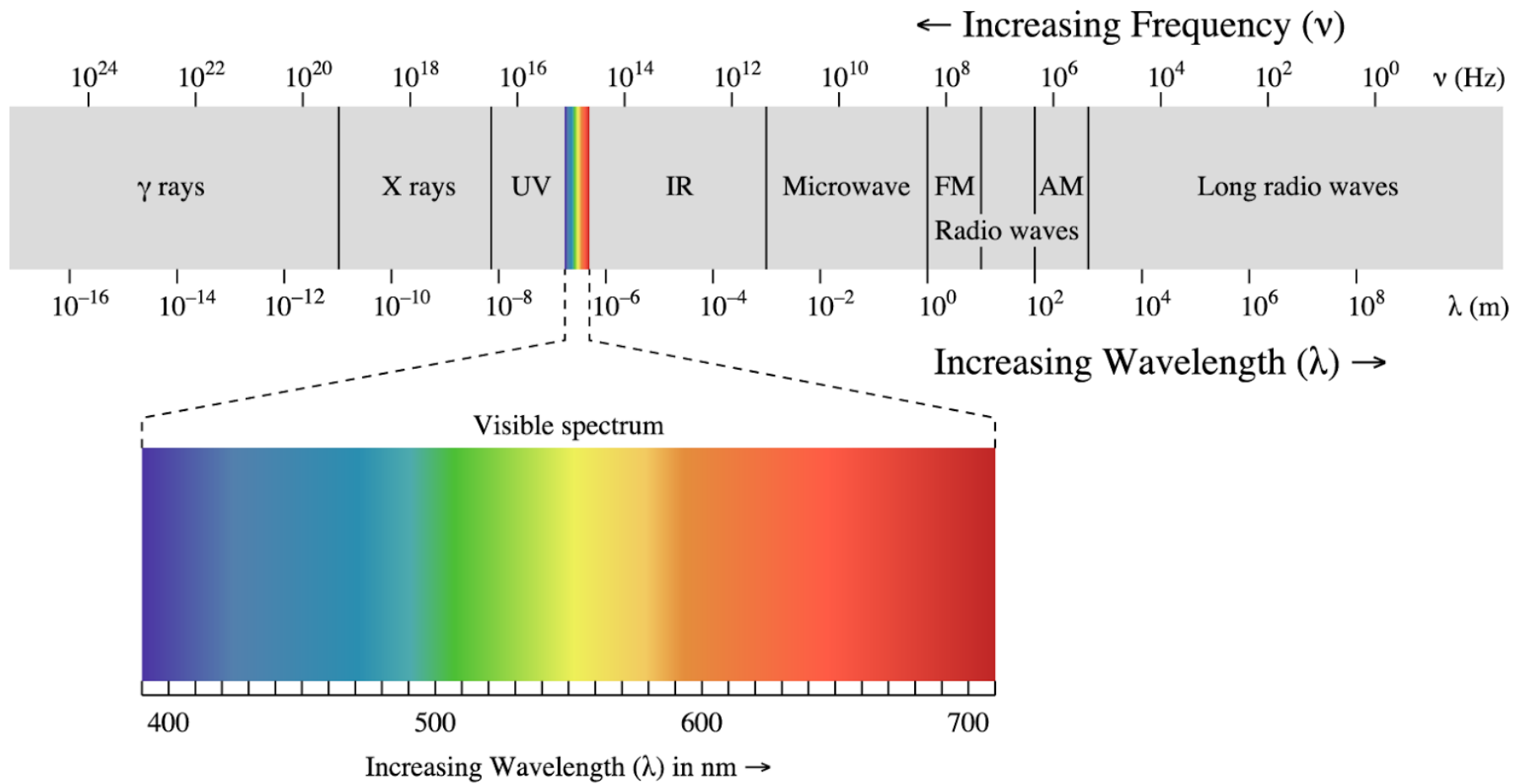


# Field Distortion



## 2. Wave Optics

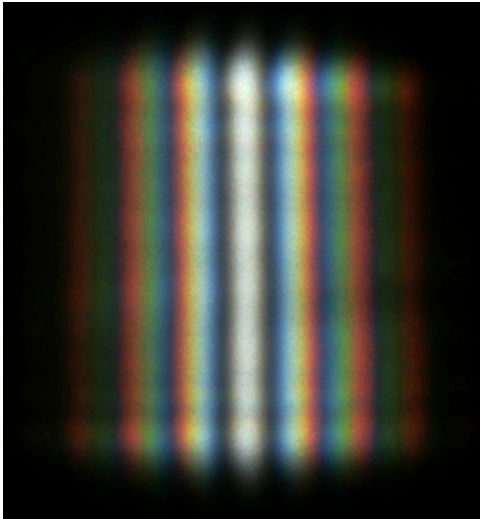
# Electromagnetic Spectrum



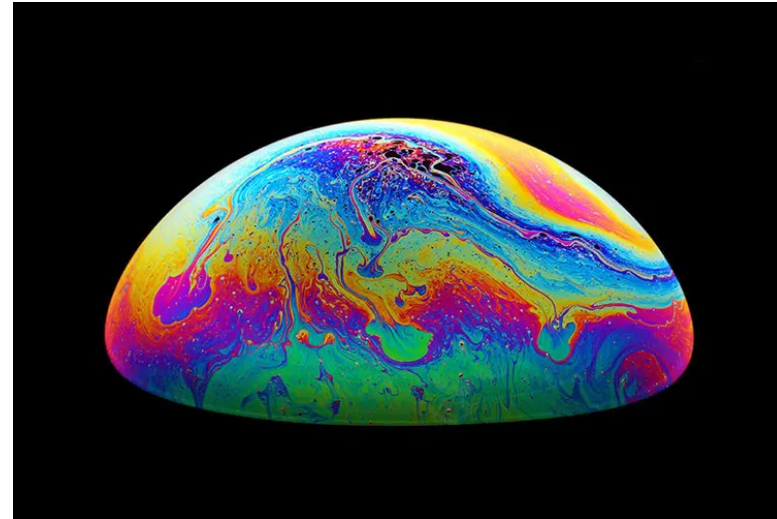
# Signatures of waves - Interference

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double slit with white light



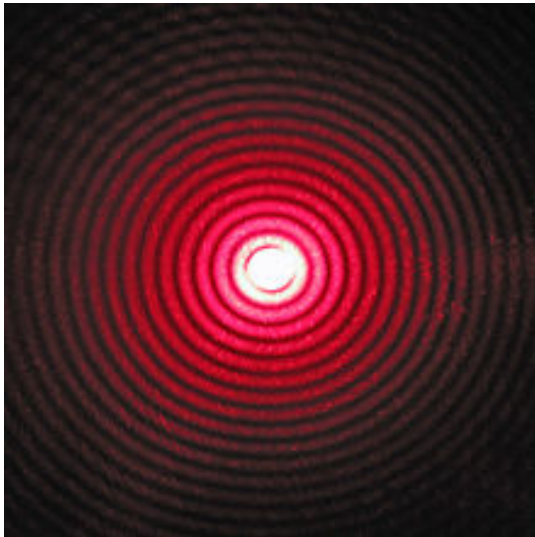
soap bubble



# Signatures of Waves - Diffraction

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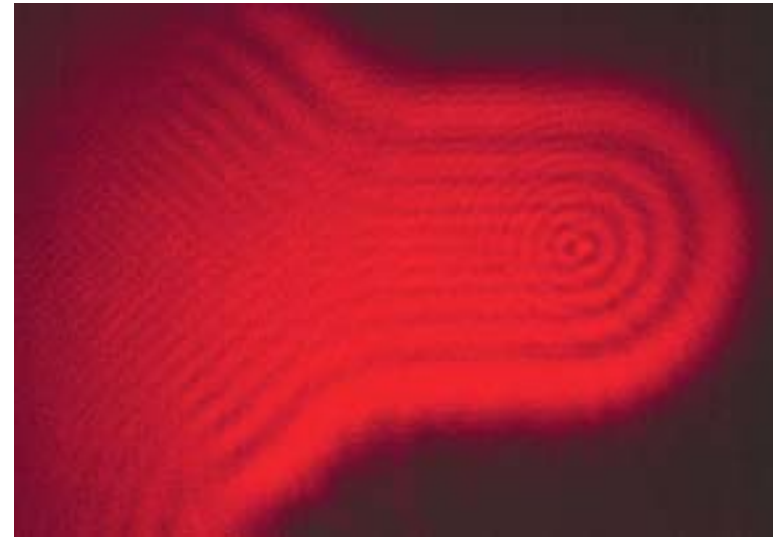
pinhole diffraction



edge diffraction

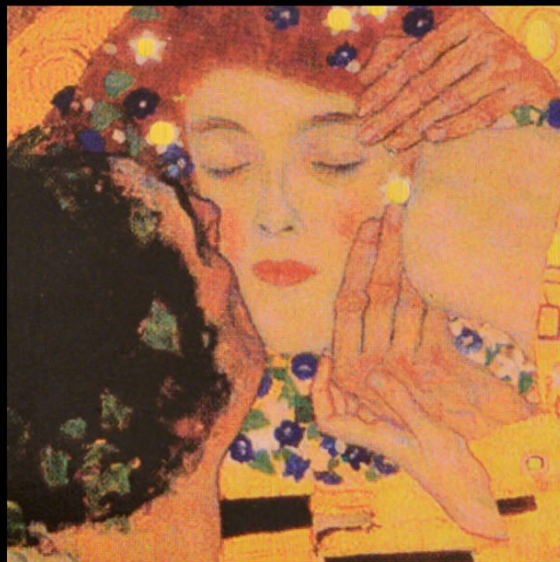


keyhole diffraction





f/5.6



f/8



f/22



f/32

