

CMSC 498W

Lecture 19

2016-04-14

Case Study:  
Cinematic VR

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# Cinematic VR

- 3D Video
- 360 Video

# Cinematic VR

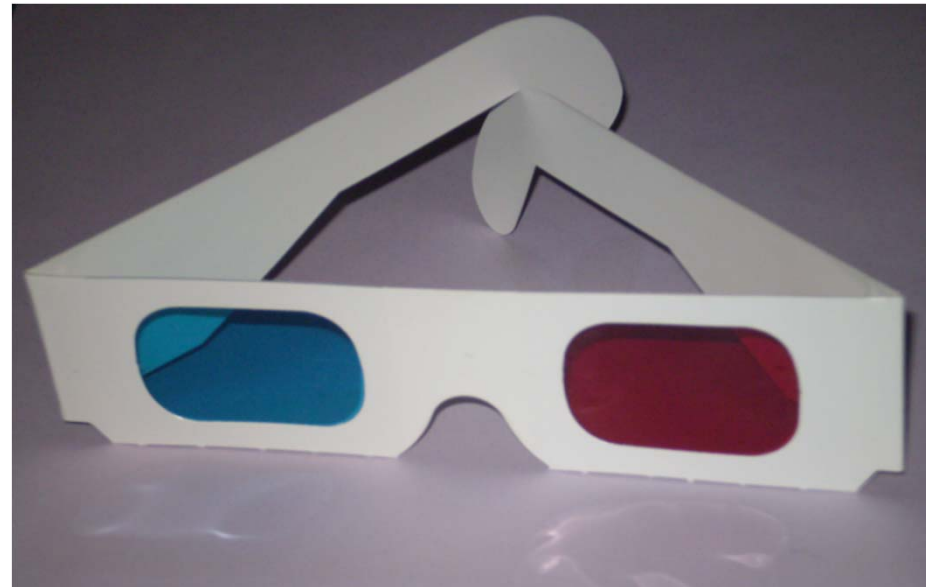
- 3D Video
  - What depth to use?
  - Close-up vs. “Close-up”
- 360 Video
  - Where is the crew?
  - Where should the viewer look?

# Cinematic VR Displays

- Theatrical
  - Anaglyph
  - Polarized
- Home
  - Autostereoscopic
  - Active Shutter
  - Head-Mounted Displays
    - Cardboard

# Anaglyph

- Red/Cyan lenses
  - Or Blue/Yellow, etc.
- Reduces color perception
- Cheap



# Light Combinations

White = (R)ed + (G)reen + (B)lue

(C)yan = G + B

(M)agenta = R + B

(Y)ellow = R + G

# Analglyph

Red Lens

White  $\rightarrow$  R

R  $\rightarrow$  R

G  $\rightarrow$  Black

B  $\rightarrow$  Black

Black  $\rightarrow$  Black

# Analglyph

Red Lens

White  $\rightarrow$  R

R  $\rightarrow$  R

G  $\rightarrow$  Black

B  $\rightarrow$  Black

Black  $\rightarrow$  Black

Cyan Lens

White  $\rightarrow$  G + B

R  $\rightarrow$  Black

G  $\rightarrow$  G

B  $\rightarrow$  B

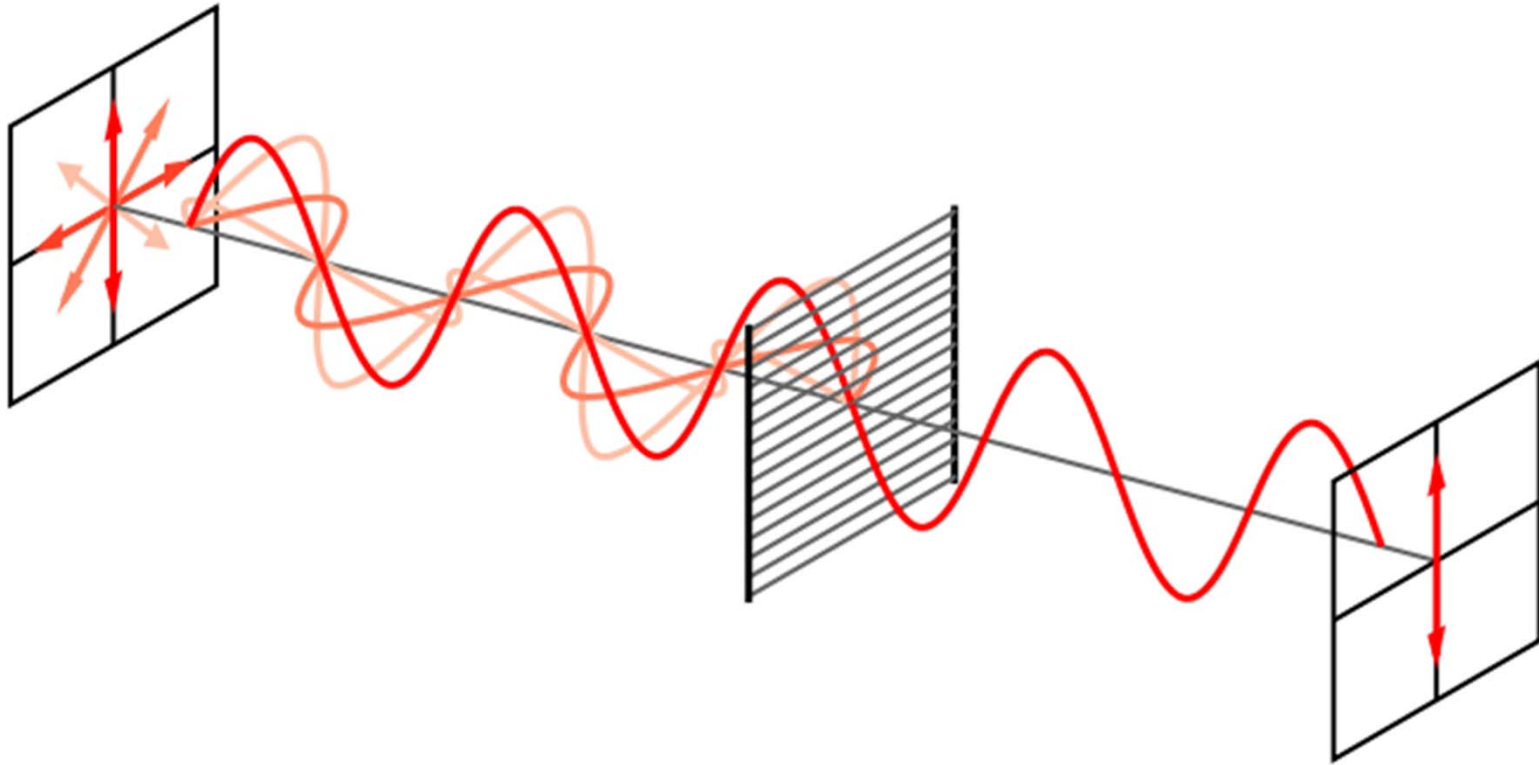
Black  $\rightarrow$  Black



# Polarized

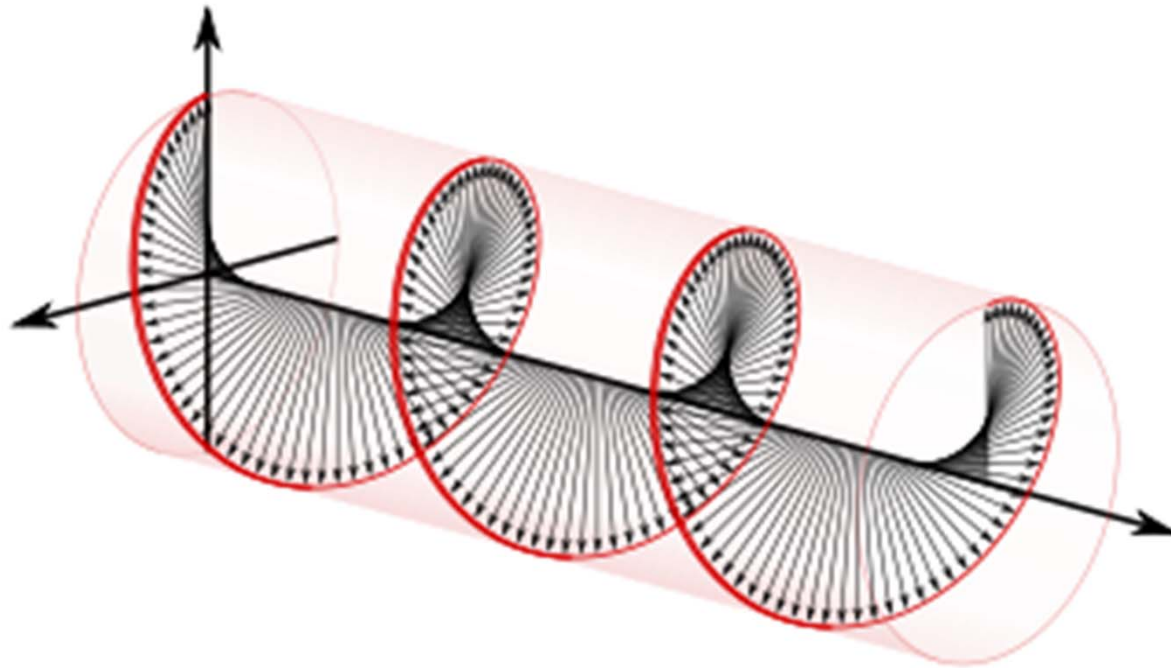
- Differently polarized lenses
  - Horizontal/Vertical, Left/Right Handed
- Full color perception
  - Reduces brightness
- Relatively cheap

# Polarized



## Linear Polarization

# Polarized



## Circular Polarization

# Head-Mounted Displays

- Cinema software available
  - Rift, Gear VR, Cardboard, etc.
- Virtual screen can reduce simulator sickness

# Cardboard (Mobile)

- Cheap
- Portable
- But...
- No Tracking
- 3D less portable
- Low resolution



[https://store.google.com/product/google\\_cardboard](https://store.google.com/product/google_cardboard)