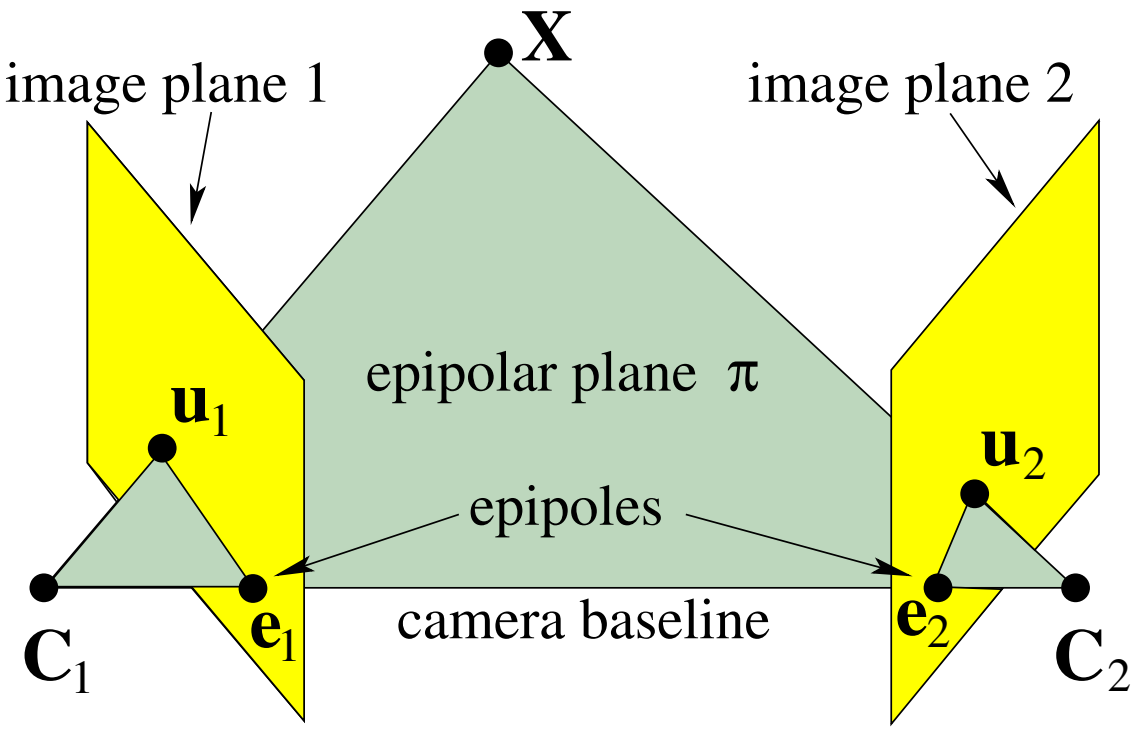
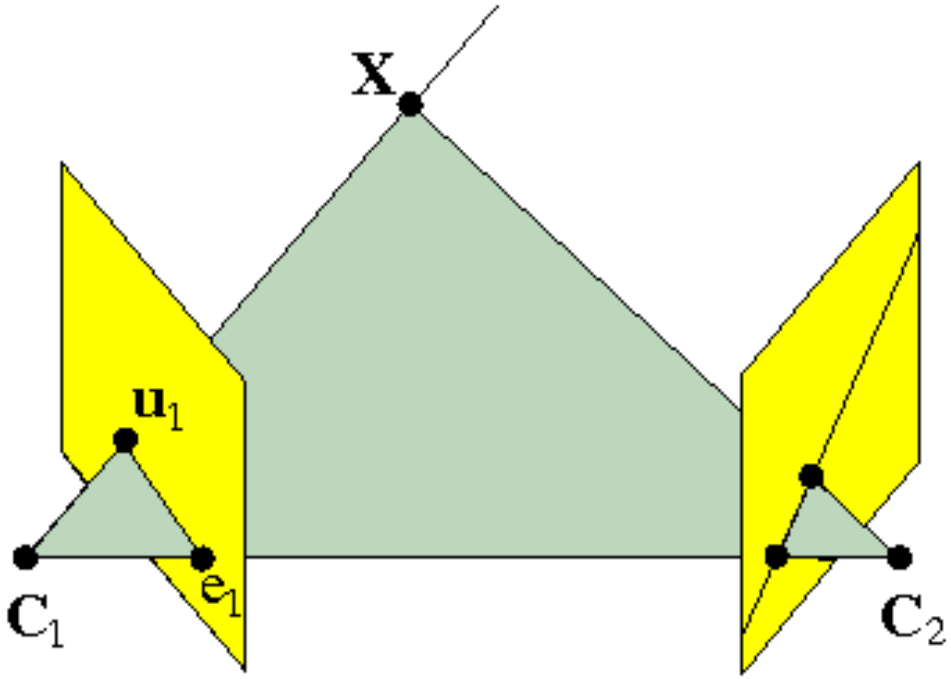
Geometry of stereo vision



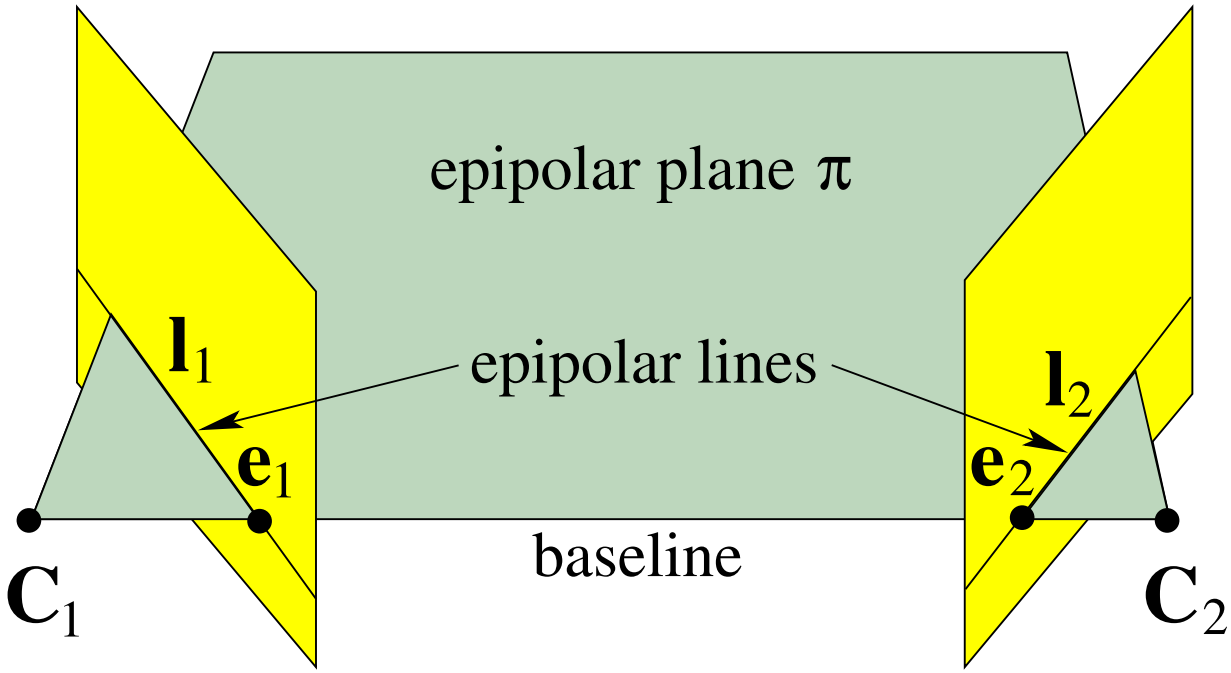
- **Baseline C_1C_2** connects two focal points.
- Baselines intersect image planes at epipoles.
- Two focal points and the spatial point **X** defines **epipolar plane**.

Geometry of stereo vision: a video



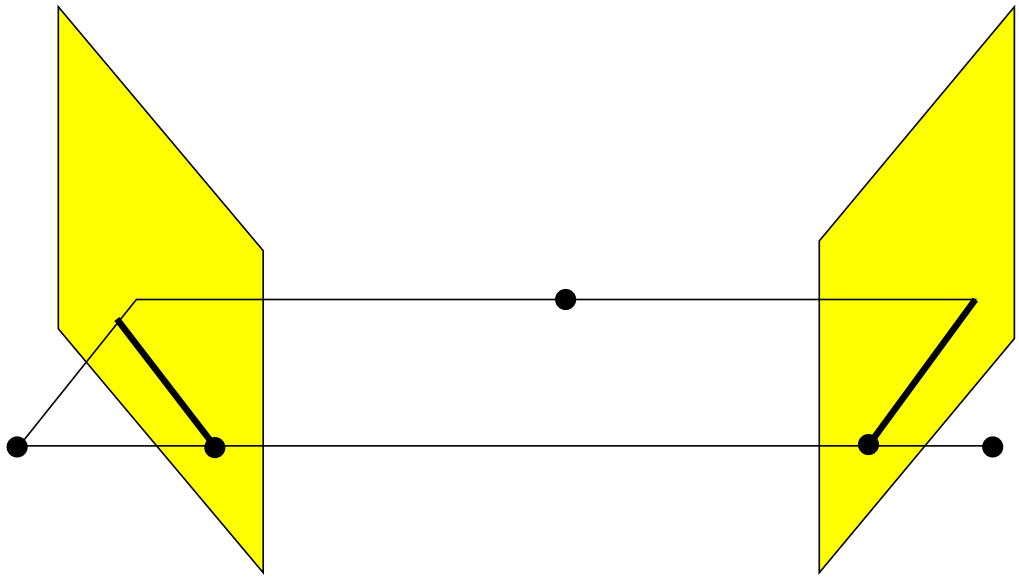
- Point **X** lies on line on ray back-projected using the point in the first image
- Point in the second image, corresponding to $\mathbf{u}_1$, lies on an **epipolar line**
  - $\rightarrow$ **epipolar constraint**
- Line $\mathbf{u}_1\mathbf{e}_1$ is the related epipolar line in the first image.

Epipolar geometry



- Each plane, containing the baseline, is an epipolar plane
- Epipolar plane π intersects the images at lines $\mathbf{l}_1$ and $\mathbf{l}_2$.
  - $\rightarrow$ Two epipolar lines correspond to each other.

Epipolar geometry: video



- Epipolar plane 'rotates' around the baseline.
- Each epipolar line contains epipole(s).