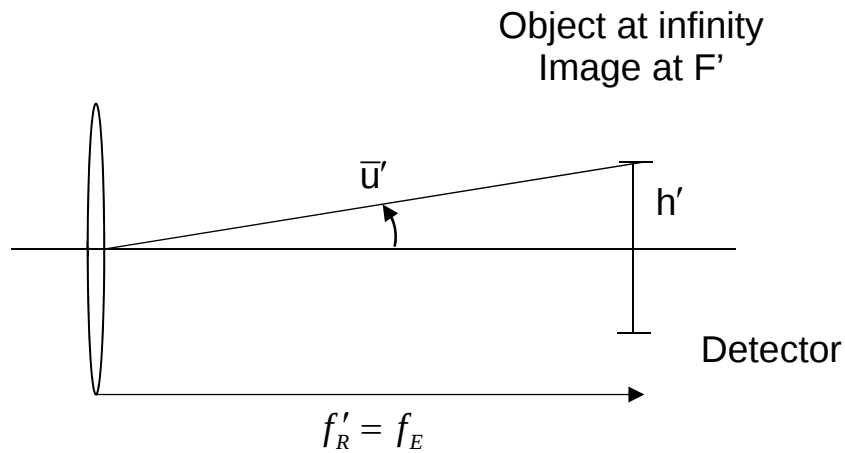


FOV and Focal Length

A 1 cm diameter detector is used to image a scene at infinity. What is the angular field of view (FOV) when using a lens with the following focal lengths: 10 mm, 25 mm, 50 mm, 100 mm, 200 mm, 1000 mm? Assume a thin lens, and report the FOV in degrees. The center of the detector is aligned with the optical axis of the lens.

Solution:



$$\bar{u}' = h' / f_E$$

$$h' = D_{DET} / 2 = 5mm$$

$$f_E = \text{various}$$

$$HFOV = \tan^{-1}(\bar{u}')$$

$$FOV = 2HFOV$$

$f_E(\text{mm})$	$\bar{u}'$	FOV(degrees)
10	0.5	53.1°
25	0.2	22.6°
50	0.1	11.4°
100	0.05	5.7°
200	0.025	2.9°
1000	0.005	0.57°