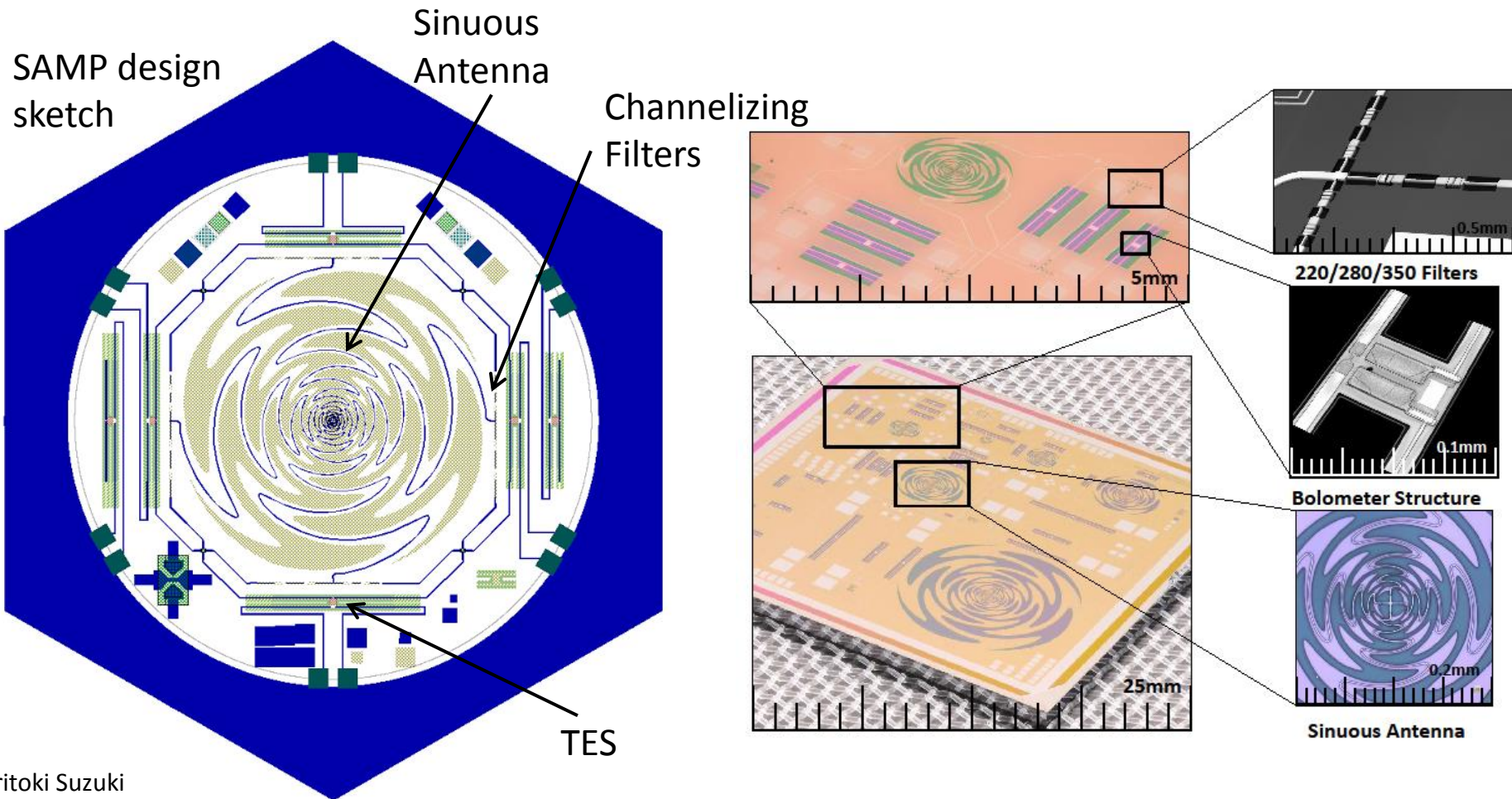


# Sinuuous Antenna Multichroic Pixel (SAMP), coupling to sky

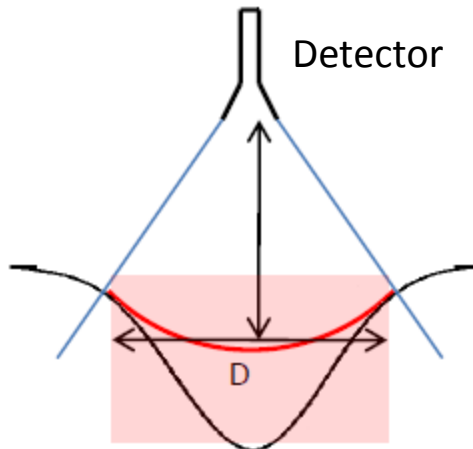


# Lenslet forms a beam

Beam width =  $2.95 * \lambda / (\pi * D)$ ,  
D = lenslet diameter

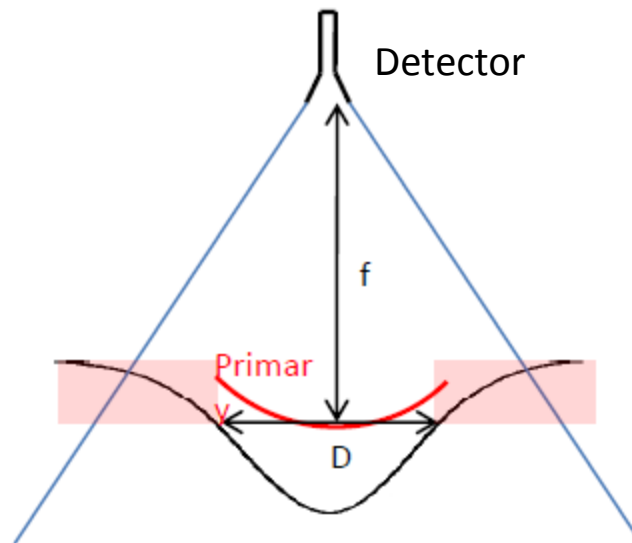


~6 mm  
lenslets for  
Polarbear



## **Illumination Efficiency:**

How effectively primary is used  
Tophat illumination over entire  
primary size = 100%



## **Spillover Efficiency**

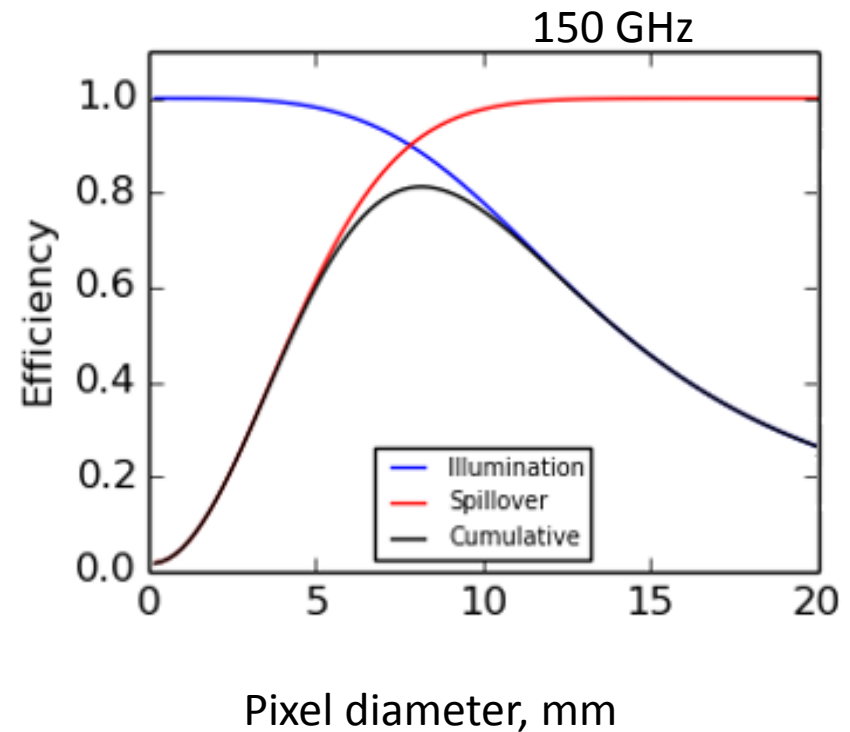
% of feed that lands on primary

- Pixel size controls aperture efficiency

- Mapping speed is:

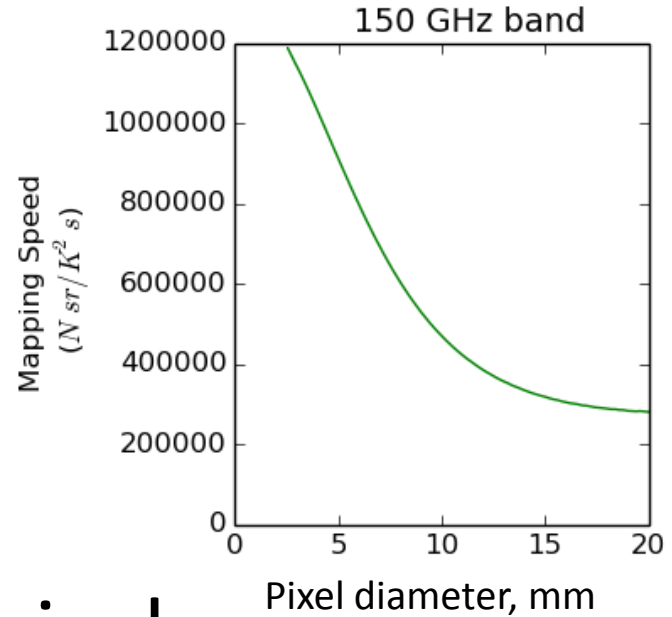
$$MS = \frac{N_{pixel}}{NET_{pixel}^2}$$

- Decreases with,
  - Higher noise
  - Lower efficiency (efficiency is embedded in NET)
- Increases with,
  - Number of pixels (FP area increasing or pixel size decreasing)



# Cold stop = Small pixels

Example calculation  
Stop at 1K



# Warm stop = Larger pixels

Example calculation  
Stop at 4K

