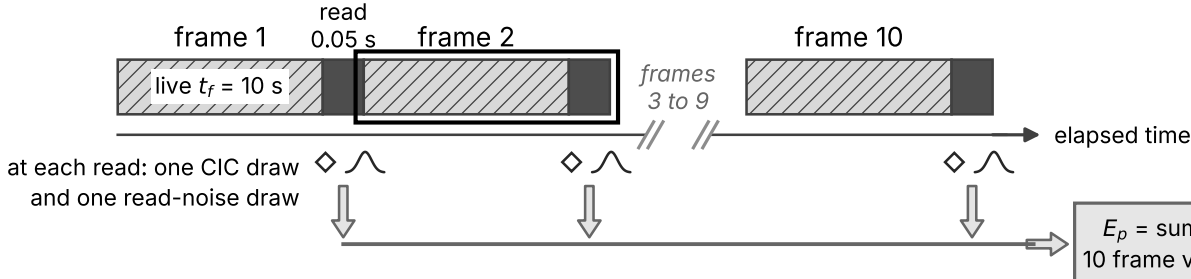
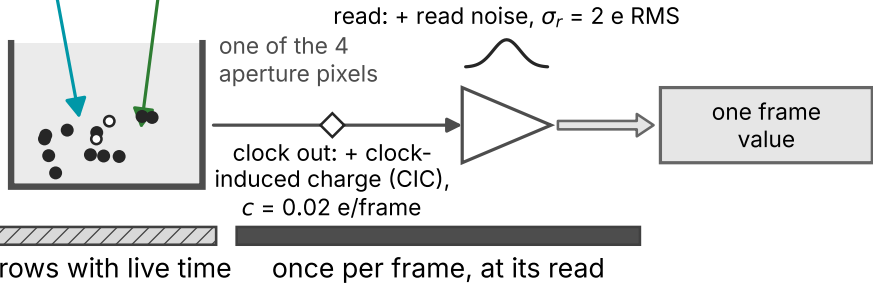


independent Poisson charge,
independent Gaussian reads

- photoelectrons, quantum efficiency (QE) $q = 0.5$
- dark charge, $d = 0.01$ e/s



live time $t_{live} = 10 \times 10 \text{ s} = 100 \text{ s}$, elapsed time $10 \times (10 \text{ s} + 0.05 \text{ s}) = 100.5 \text{ s}$

sum over the 4 aperture pixels	grows with	calculation	mean (e)	variance (e ²)
planet photoelectrons	live time	20/s (aperture) x 0.5 x 100 s	1000	1000
background photoelectrons	live time	80/s (aperture) x 0.5 x 100 s	4000	4000
dark charge	live time	4 px x 0.01/s x 100 s	4	4
clock-induced charge (CIC)	frames	4 px x 0.02 x 10 frames	0.8	0.8
read noise	reads (variance only)	4 px x 2 ² x 10 reads	0	160
total, $\Sigma_p E_p$ over 4 pixels			5004.8	5164.8

expected values and variances of the worked count example; no random draw

SNR after subtracting the known background, dark and CIC means = $1000 / \sqrt{5164.8} = 13.915$