~~1. Imaging / Triangulation~~ $c = \frac{d}{t}$

need stability + calibration

~~2. Navigation / GPS~~ $(10^{-11}\,s)(3\times10^{10}\,cm/s) = .3\,cm$

need stability

3. Metrology

4. Deep Space or one-way Nav. 100ps = 3cm

1. Optical

accuracy ~ 10nm

want < 10ps

10^5

MW

$\lambda = 21\,cm$

accuracy ~ 1cm

$D_\theta = 10{,}000\,km$

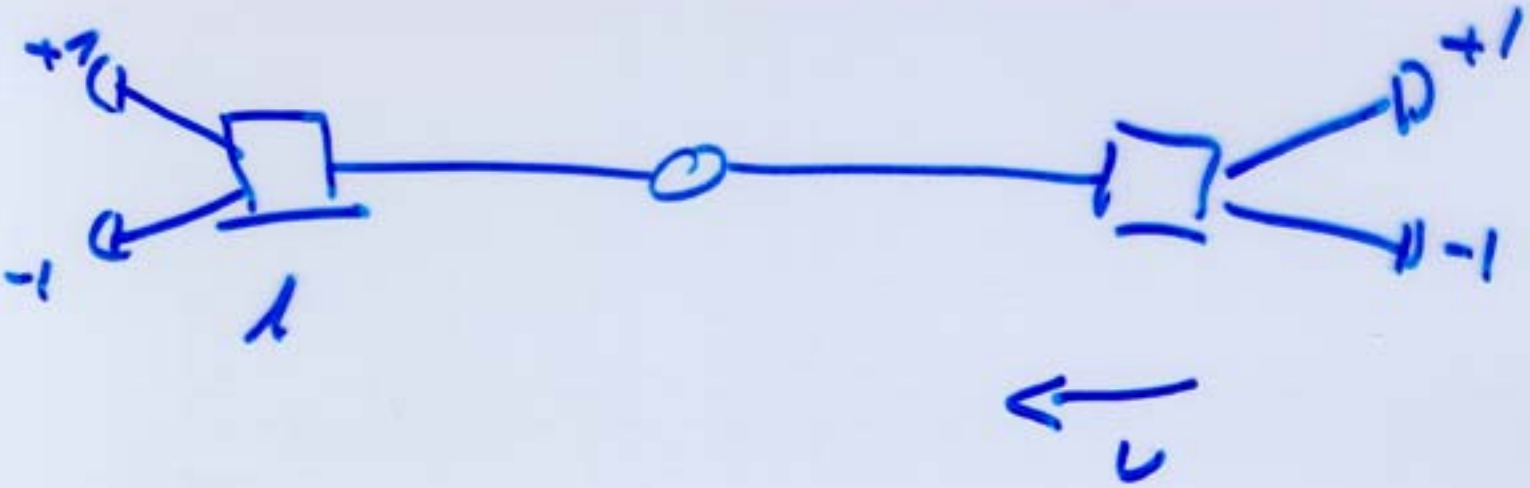
10^{-9}

2. Need better clocks ~~100ps~~ ~~= 3cm~~

~~esp. deep space~~

3 Maybe

10^{-9}

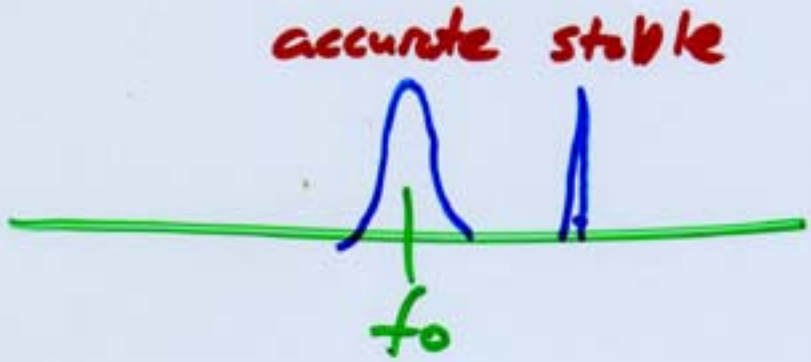


accuracy : measured relative to 1 sec

~~precision : reproducibility~~

stability : unknown but constant relative to standard

H maser is stable but not accurate



$$|\uparrow\rangle|\downarrow\rangle - e^{i\delta}|\downarrow\rangle|\uparrow\rangle$$