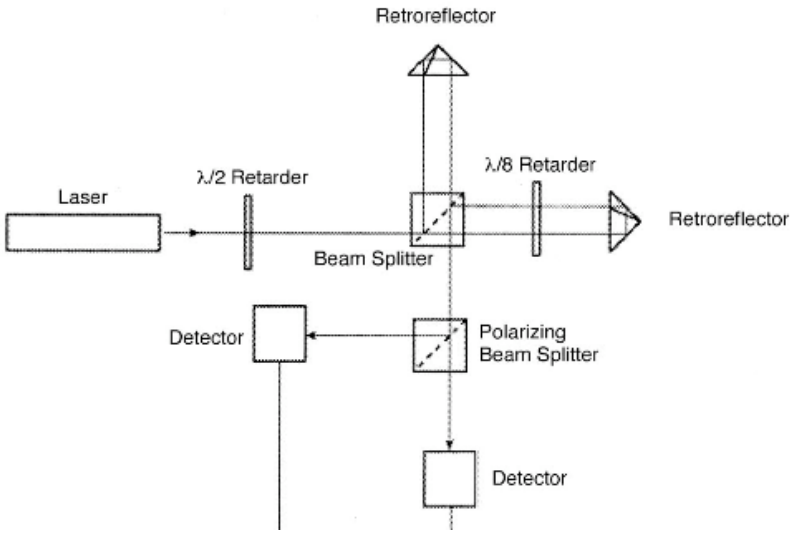
UCSD Optical Seismometer

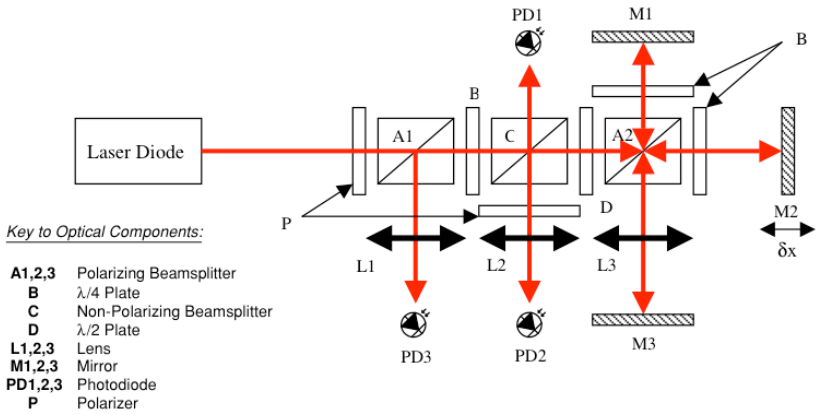
- $P_{Det1}=P_{in}*\sin^2(L_-*c_1)$
- $P_{Det2}=P_{in}*\cos^2(L_-*c_2)$
  - where c is a constant, dependent on λ and other setup constraints
  - P_{in} fluctuates with time
- Pros
  - allows for detection of quadrature through a fairly large L_- range
  - Sensitive throughout length range



Ref: Zumberge, et al. "Resolving Quadrature Fringes in Real Time." App Optics Vol. **43** No. 4 p. 771 (2004).

EUCLID

- $P_{Det1}=P_{in}/2$
- $P_{Det2}=P_{in}*\sin^2(L_-*c_1)$
- $P_{Det3}=P_{in}*\cos^2(L_-*c_2)$
  - Detectors 2 & 3 phase shifted by Pi/2, fringe offset
- Pros & Cons
  - allows for detection of quadrature through a fairly large L_- range
  - Sensitive throughout length range
  - allows for normalization (removal of P function with detector 1 information)
  - diode allows for small size (less than 6cm square
  - Only sensitive up to a few mm – coherence length of laser diode



Ref: Aston, et al. "An Interferometric Sensor for Satellite Drag-free Control." Class Quantum Grav, Vol. **2** p. S269 (2005).