

# Proposal to put polarizers inside PRC and SRC

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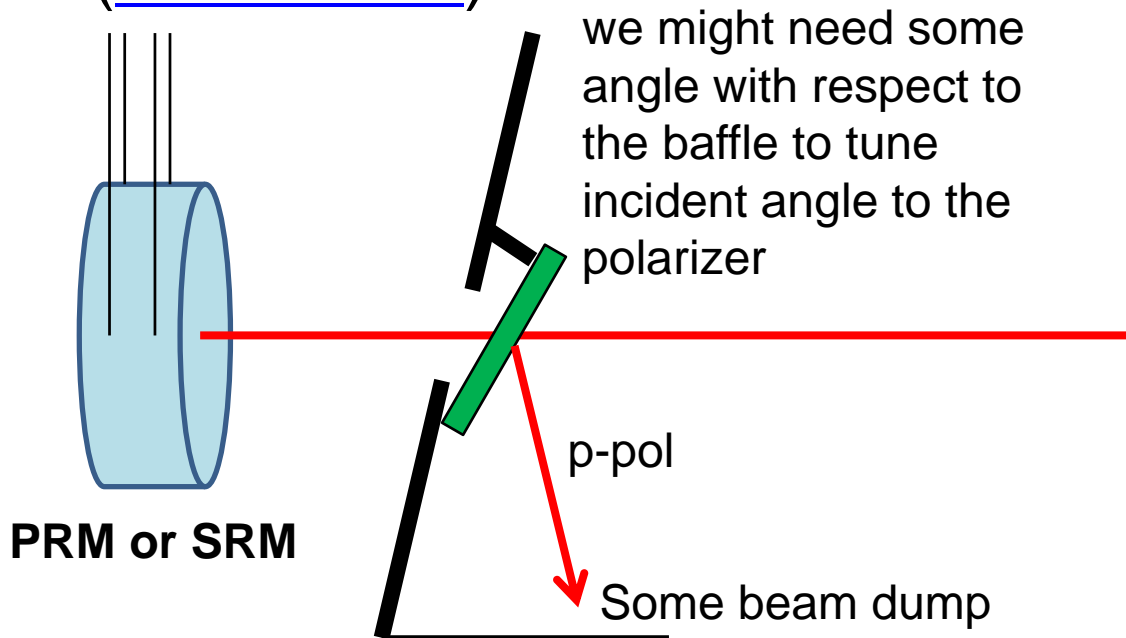
# Background

- We have ~10% loss on ITM single bounce due to p-polarization generation ([JGW-G1910369](#))
- For carrier beam, this effect seems to be attenuated when the arm cavity is locked, since the sign of the carrier beam on reflection will be flipped ([klog #9393](#))
- The attenuation factor was measured to be ~3, but this is not enough. Also, this attenuation is not applied for sidebands.
- We need to fix the fringe inside DRMI for p-pol or get rid of p-pol beams to avoid sloshing issue.



# How to mount

- Beam radii at PRM and SRM are about 4.5 mm and 4.3 mm, and 3 inch PBS will be enough
- We should be able to mount this on mid size baffle
- 3 inch UHV mirror mount is also available off the shelf ([8823-UHV](#))



See [JGW-T1910200](#) for better drawing of mid size baffle

# Concerns

- Availability of 3inch polarizer which can tolerate  $O(100)$  W beam
- Thermal lensing of polarizers
- Scattered light noise
  
- May be better than having a sloshing issue...