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# OPTICAL CAVITY - PHYS 408 L2D

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## Mar 12 2018

Day 1: Begin by aligning the experimental setup

Start by removing the close mirror walking the beam so that it aligns with the far mirror at both close and far positions. Next put the lens in first aligning it vertically and then horizontally, with the reflection back towards the laser

## Mirror Reflectivity

```
%Incident Power $= 6.63 \pm .015 $mW (Note: loss due to alignment
  mirror,
%so did after mirror)
P_I = 6.63e-3; %W

% M1 Transmitted Power = 82.5 \pm 1.5 \mu W
% P_M1_trans = 82.5e-6; %W
% M1 Reflected Power = 5.93 \pm .05 $mW
% P_M1_ref = 5.93e-3; %W

% ^above measurements use wrong side of mirror (not shiny side)
% M1 Transmitted Power = 77 \pm 1 \mu W
P_M1_trans = 77.5e-6; %W
% M1 Reflected Power = 6.43 \pm .05 $mW
P_M1_ref = 6.43e-3; %W
% Reflection coefficient
R_M1 = P_M1_ref/P_I;
% Transmission Coefficient
T_M1 = P_M1_trans/P_I;
one = T_M1+R_M1%Should add to 1

% M2 Transmitted Power = 124 \pm 1 \mu W
P_M2_trans = 124e-6; %W
% M2 Reflected Power = 6.35 \pm .01 mW
P_M2_ref = 6.35e-3; %W
% Reflection coefficient
R_M2 = P_M2_ref/P_I;
% Transmission Coefficient
T_M2 = P_M2_trans/P_I;
one = (T_M2+R_M2)%Should add to 1
```

*one* =

*0.9815*

*one* =

*0.9765*

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