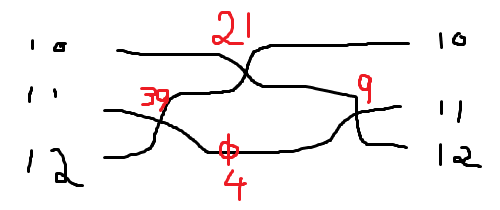
This folder contains a new attempt to take tritter data, similar to that taken on 22/08/2017 (see 20170822Explanation in the 20170822Data folder).

This time, I accounted for unbalanced loss in the switches. I measured the relative losses for each channel in the optical switch that I use to route the outputs of the chips to my power meter. I then multiplied all of my power readings for each channel by 1/(measured loss).

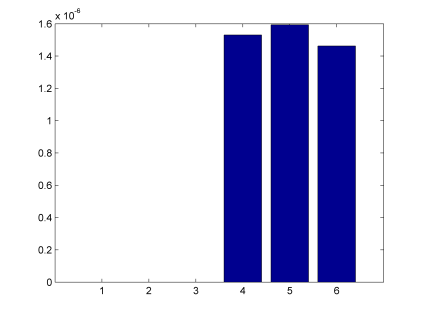
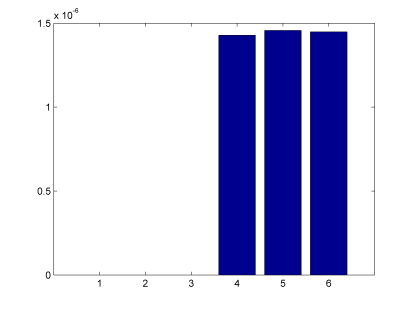
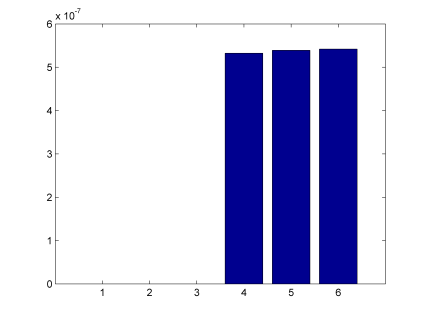
I followed Miller’s self-configuring algorithm [1] to program the tritter, schematically shown below:



1. I first sent light into 10 and adjusted MZI 21 so that 1/3 of the light went into output 10. I then set MZI 39 so that the rest of the light was equally split between outputs 11 and 12.
2. I then sent light into 11 and adjusted MZI 9 so that 1/3 of the light went into 10. I then adjusted phase shifter 4 so that the rest of the light was equally split between outputs 11 and 12.
3. I repeated the procedure above several times, because crosstalk from the phase shifters change the optimal set point for the previously programmed MZIs.
4. Once I was happy with the distribution of light from inputs 10 and 11 into outputs 10, 11 and 12, I took data for all three outputs.

The main test of this procedure is whether light from 12 also gets equally distributed between all outputs. In an ideal lossless circuit this would be the case; however with unbalanced losses equal splitting of 12 is not guaranteed.

It turns out that the end result is almost equal splitting for all inputs (inputs 10 to 12 from left to right):



Note: I only measured outputs 10, 11 and 12. The first three entries of each data file used to correspond to outputs 7, 8 and 9 but here are 0 and should be ignored.

[1] Miller, David AB. "Perfect optics with imperfect components." Optica 2.8 (2015): 747-750.