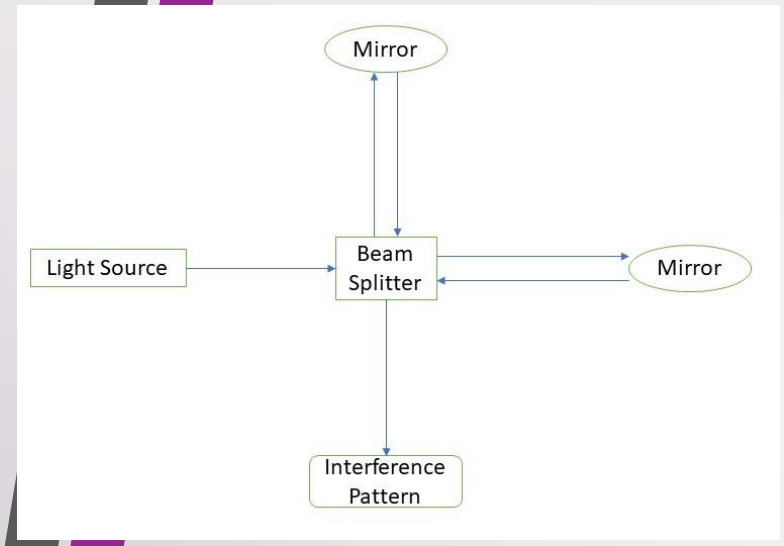
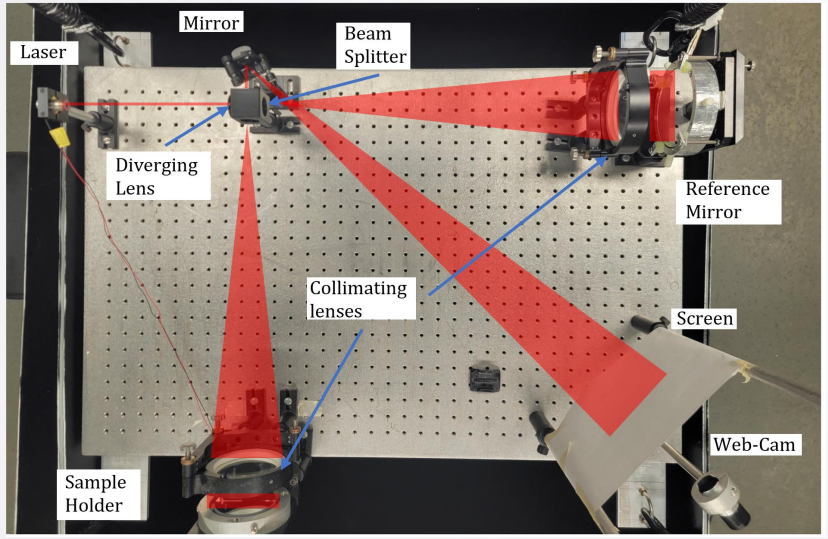
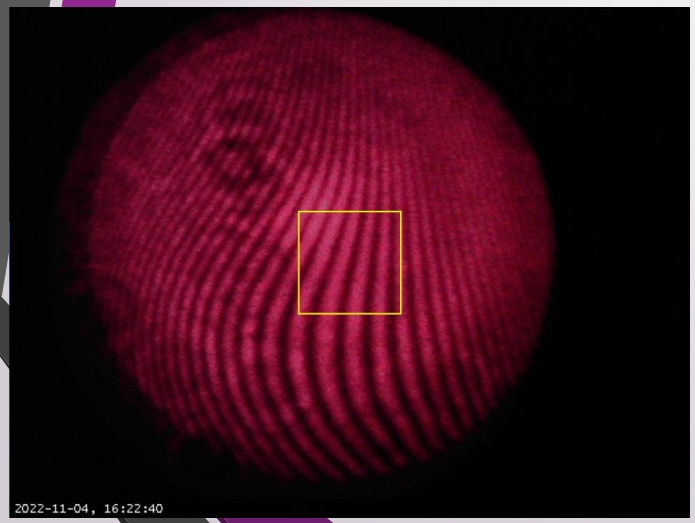
USING PHASE SHIFTING INTERFEROMETRY TO MEASURE THE TOPOGRAPHY OF THIN METAL FILMS

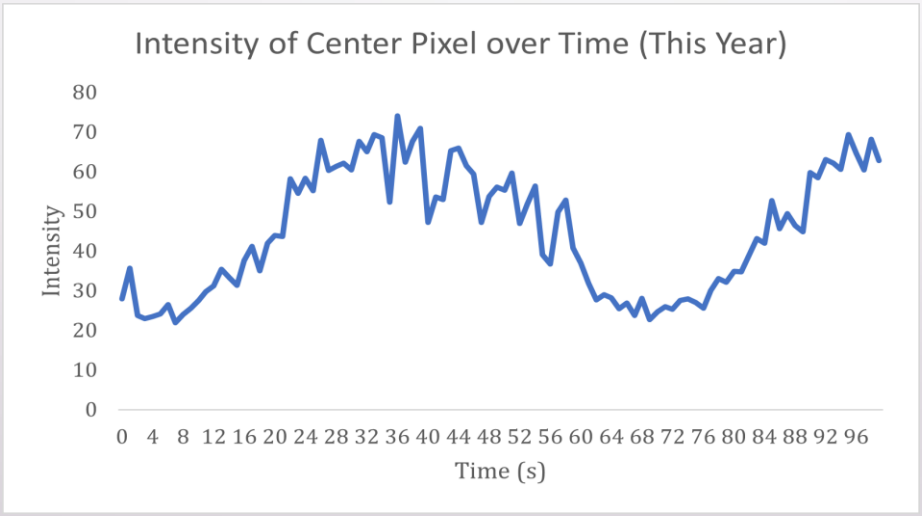
Jonathon Zdunski and Brandon Hoffman

Topics









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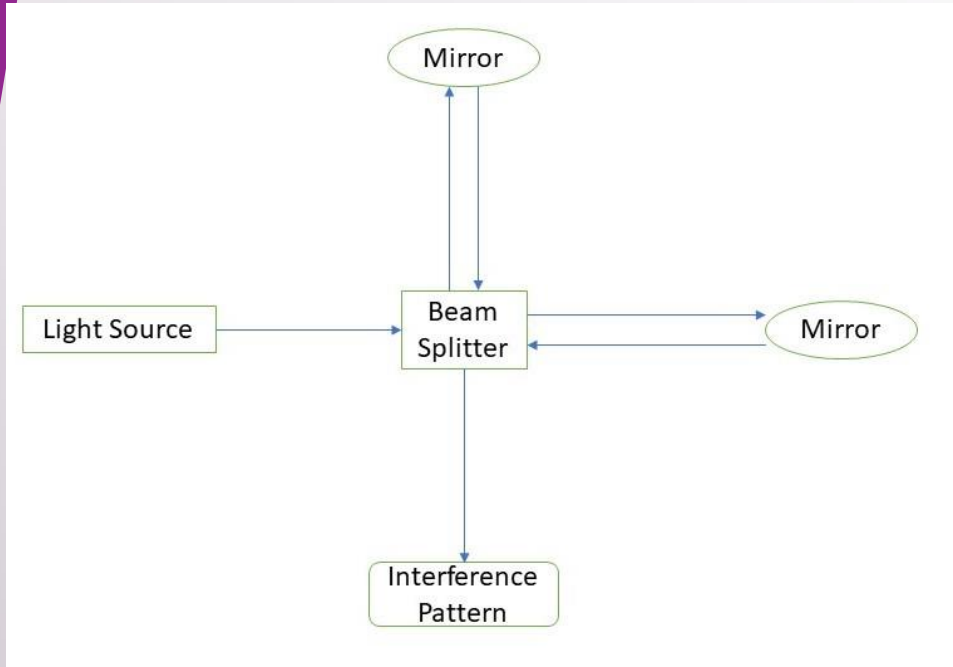
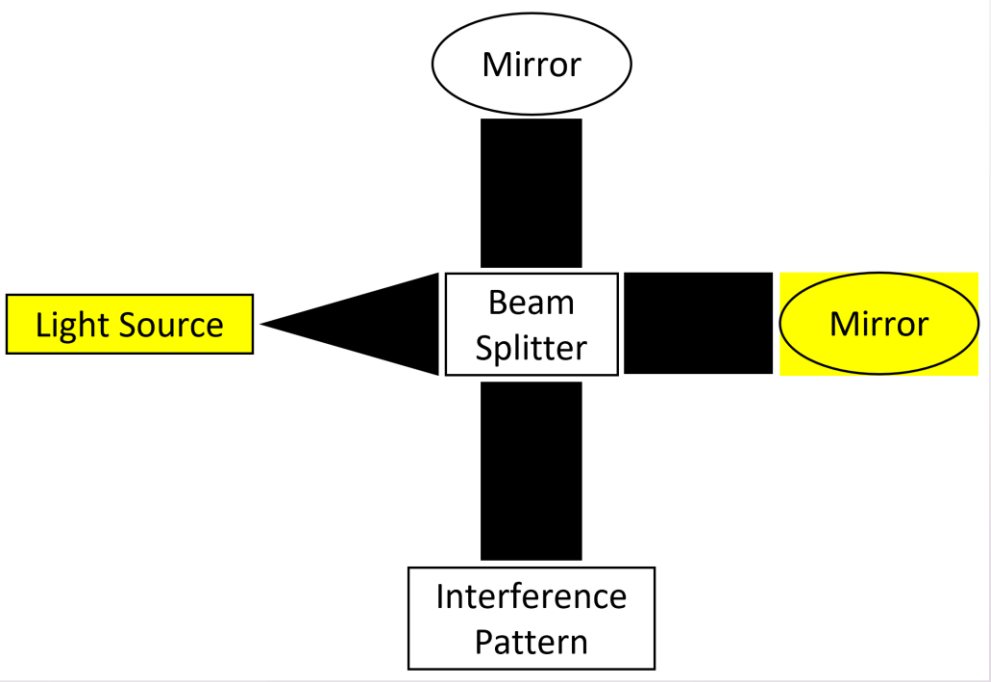
Basics of Interferometry / Advancements in Interferometry

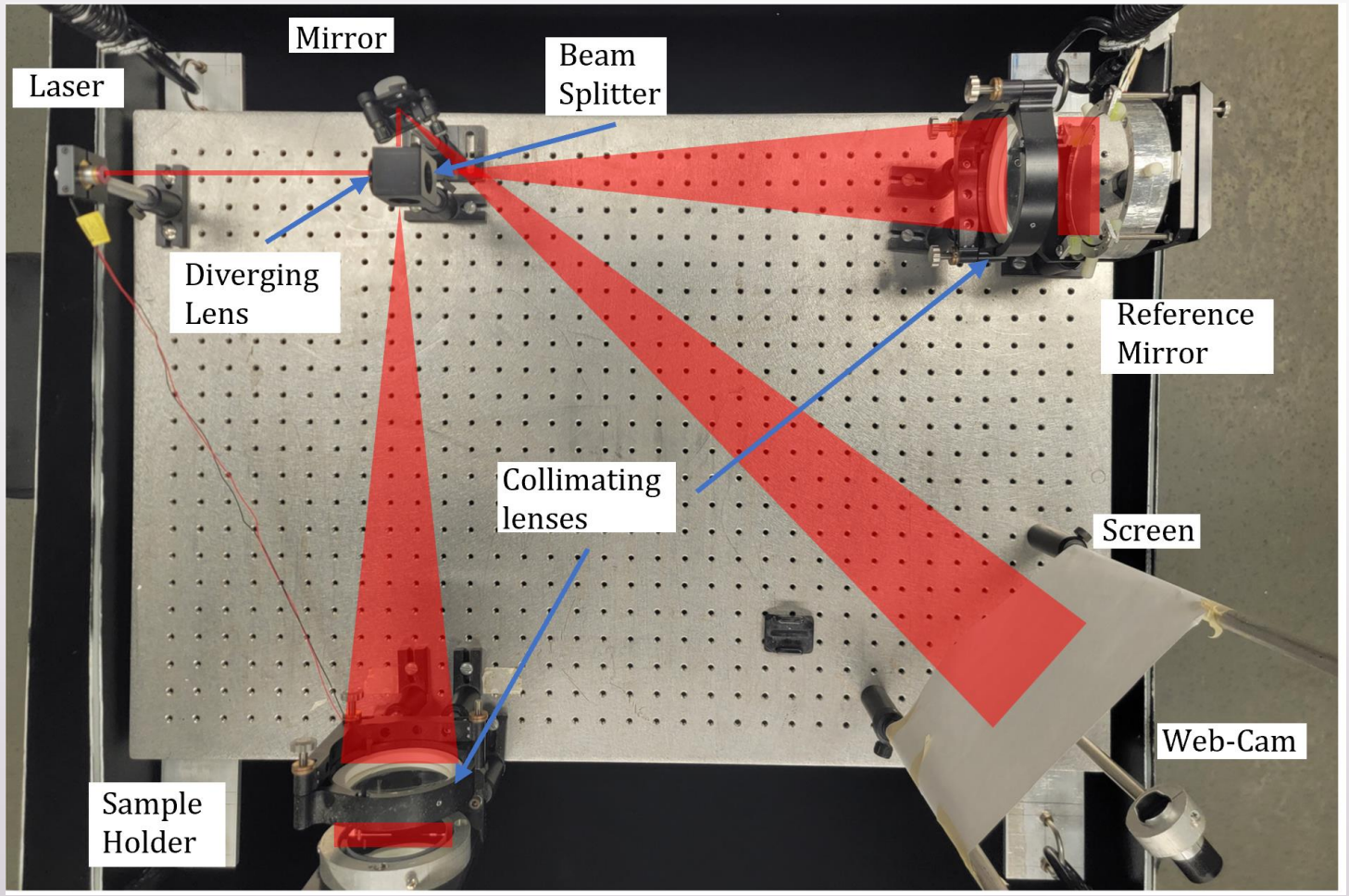


Michelson Interferometer

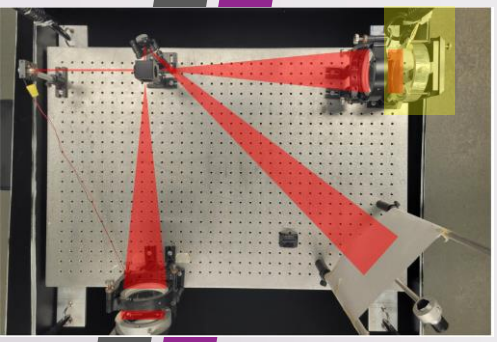


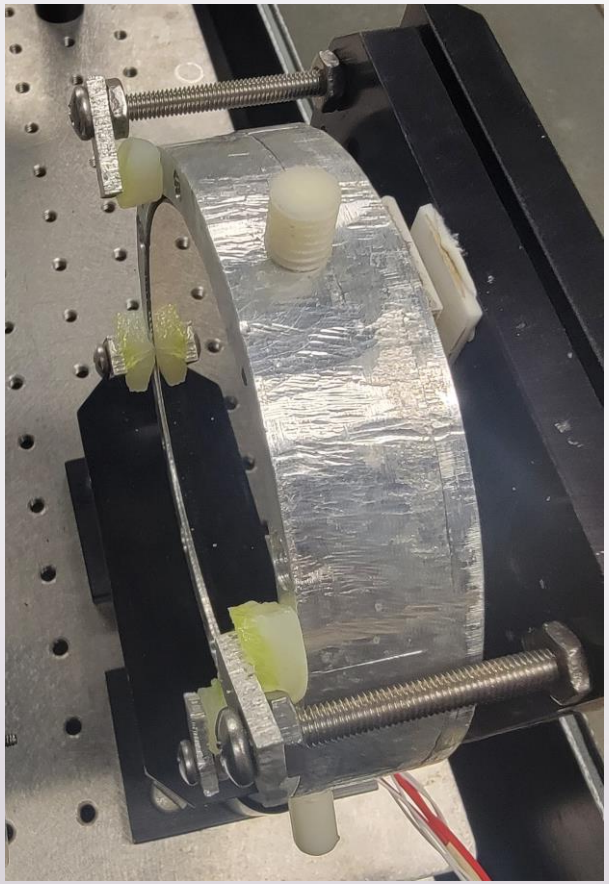
Twyman-Green Interferometer

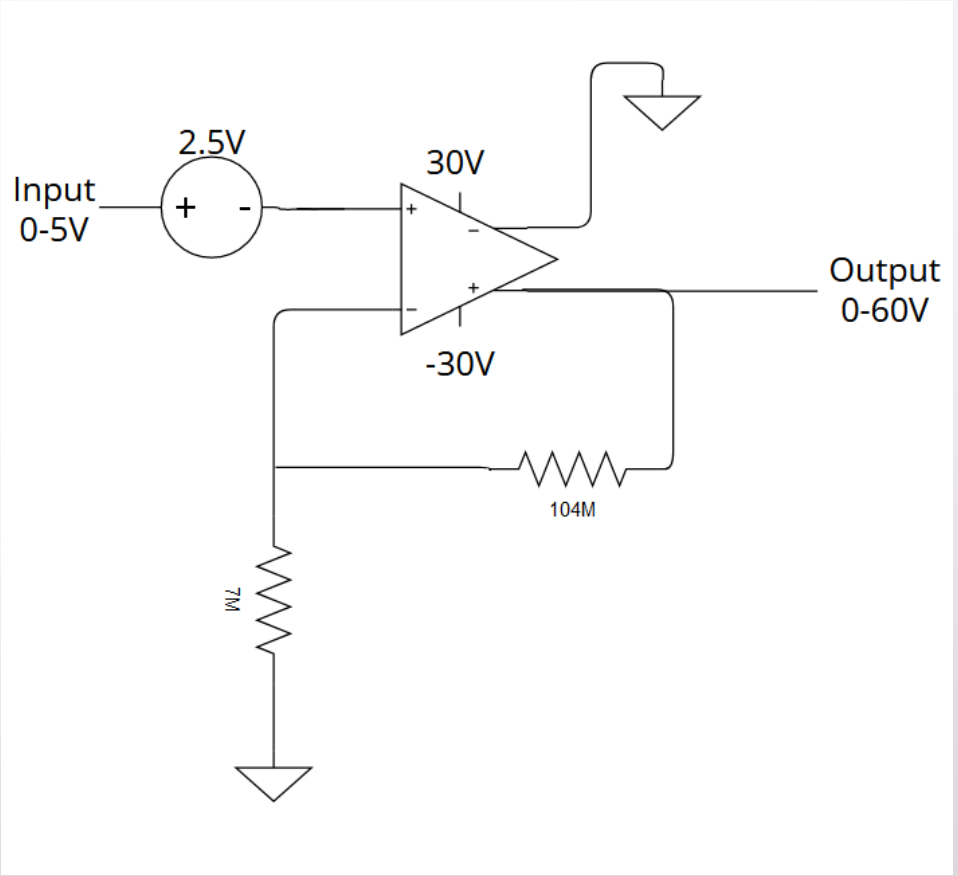
Houghton University Phase-Shifting Interferometer



Houghton University Phase-Shifting Interferometer Moving the Mirror

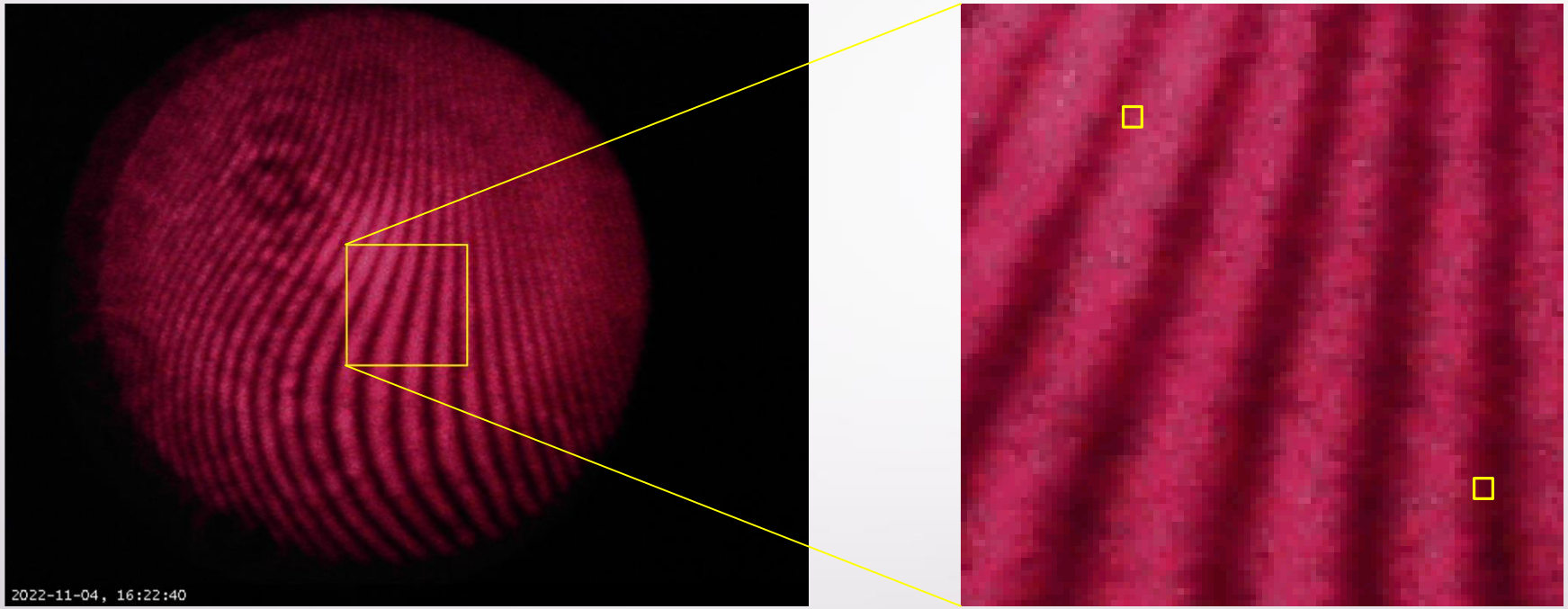






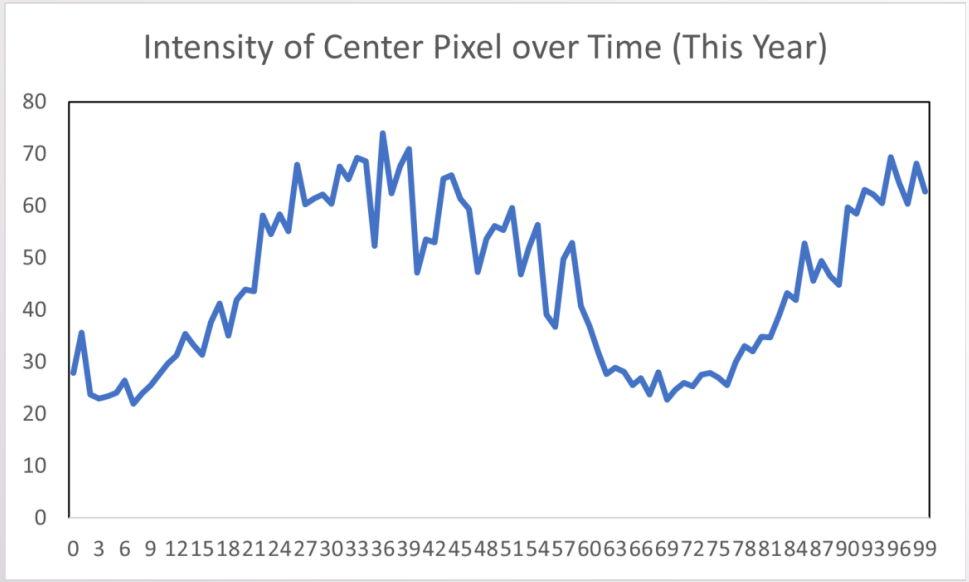
Houghton University Phase-Shifting Interferometer Mechanical Vibration Reduction

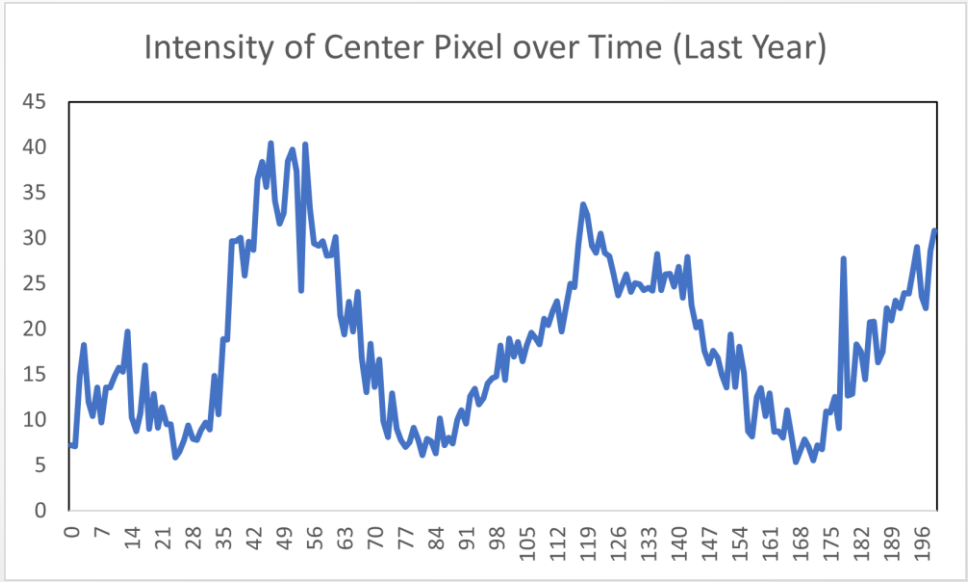
Data Analysis
Interference Pattern



6 cm diameter beam

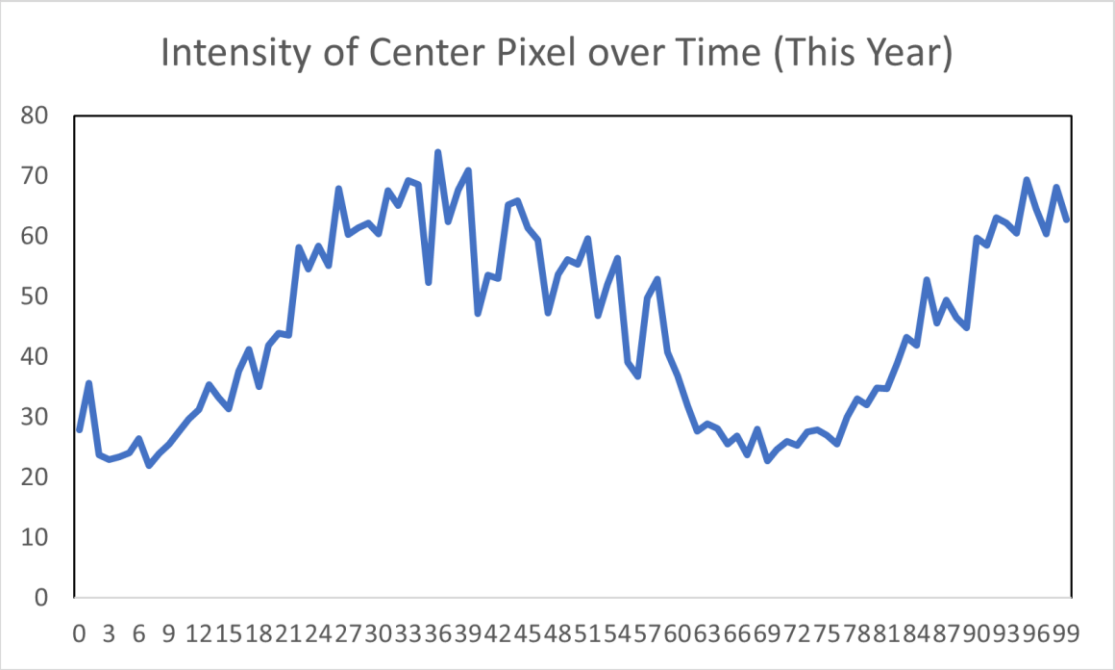
Data Analysis
Individual Pixel





Both tests, the reference mirror was supposed to move 883 nm

Code


Intensity of Center Pixel over Time (This Year)
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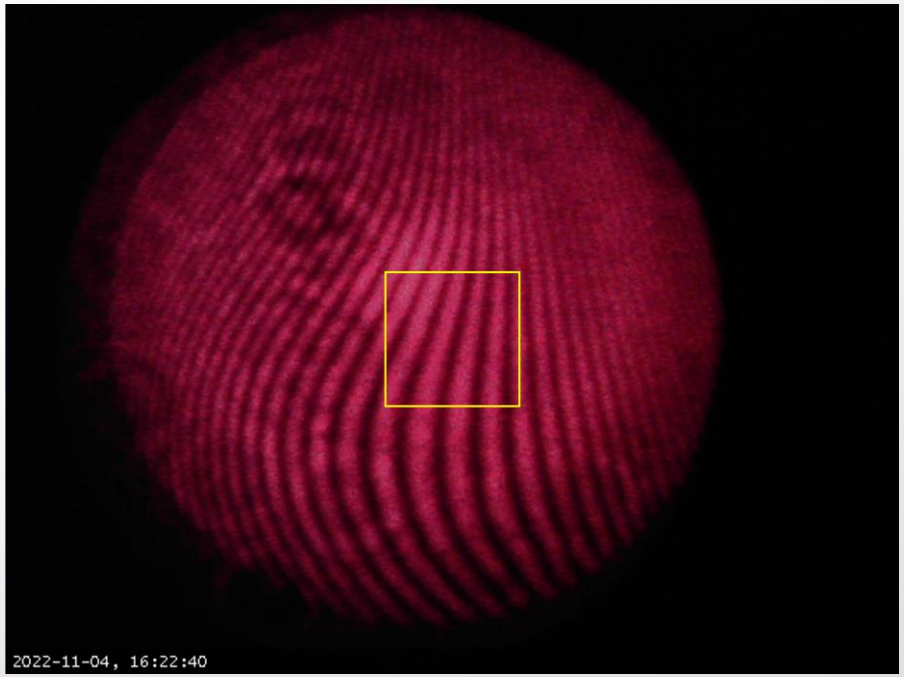
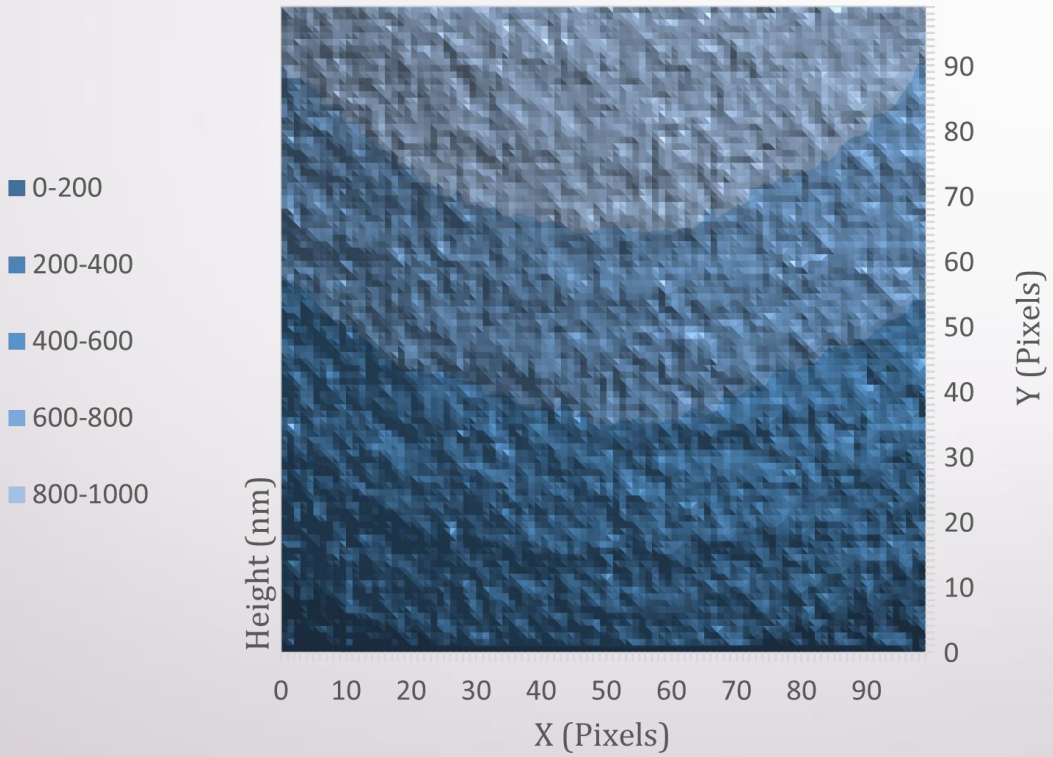
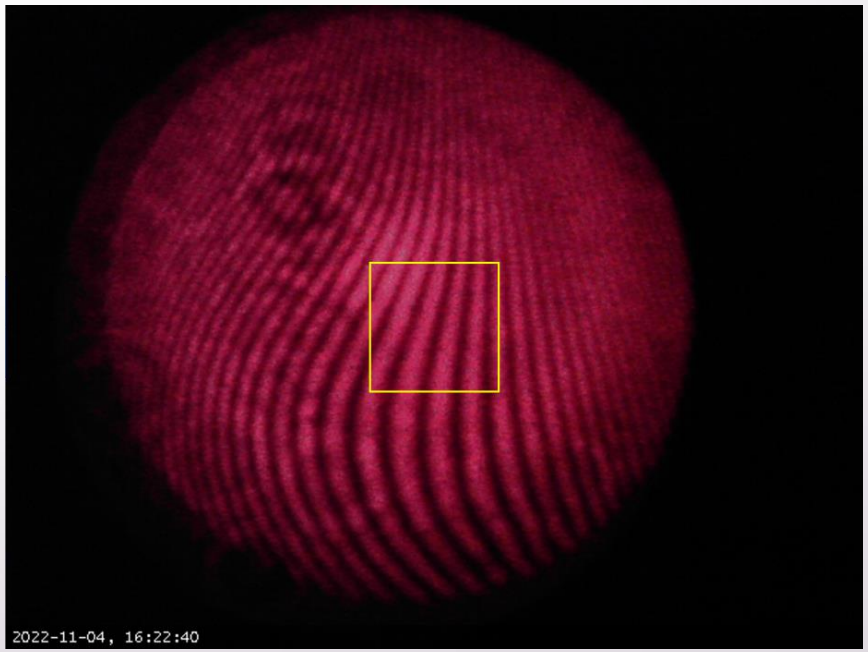
70
60
50
40
30
20
10
0
0 3 6 9 12151821242730333639424548515457606366697275788184879093969 9

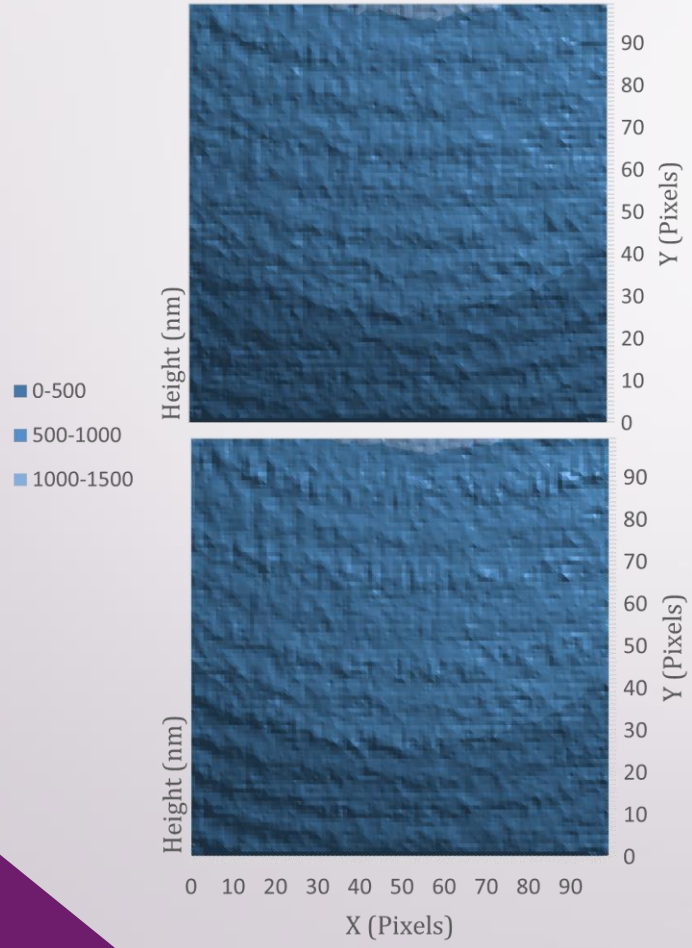

2022-11-04, 16:22:40

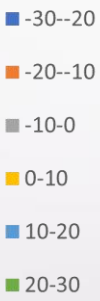
Experimental Results
Topography

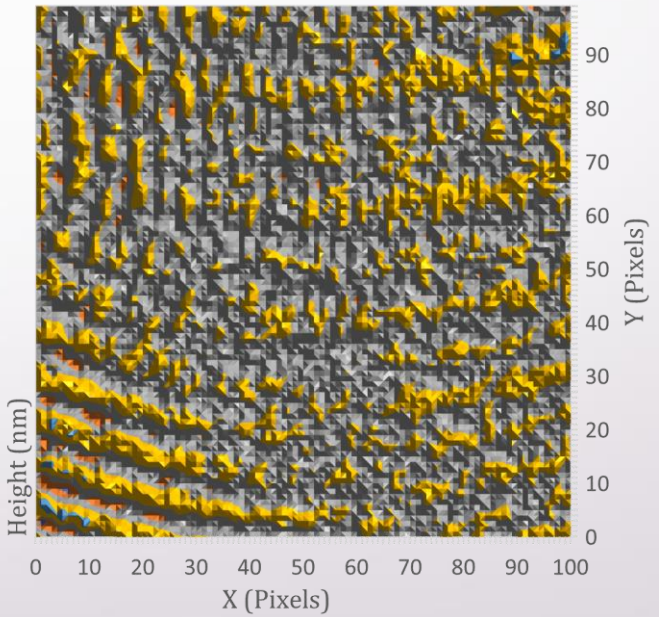




Experimental Results
Comparing the Tests



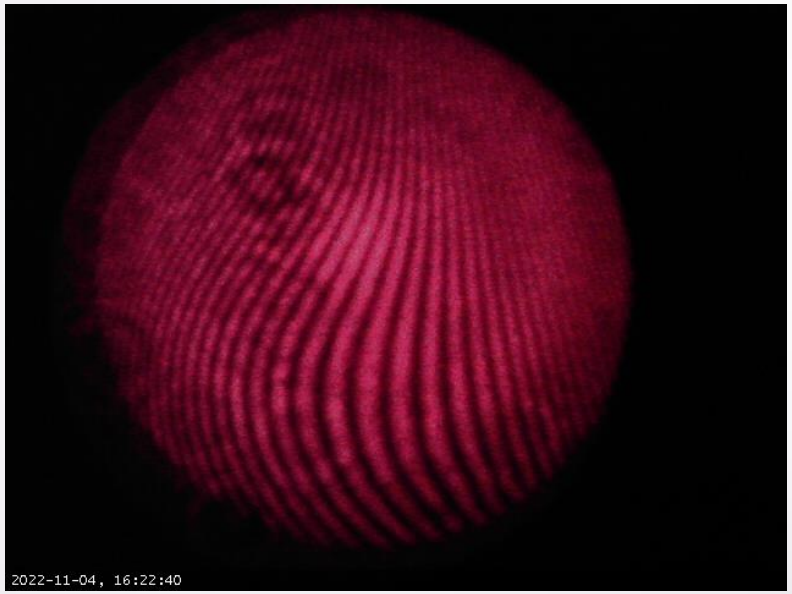




3.6 nm Standard Deviation

Future of the Experiment

https://en.wikipedia.org/wiki/LabVIEW



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Q & A