Multi Gaussian Schell Model Beams Propagation

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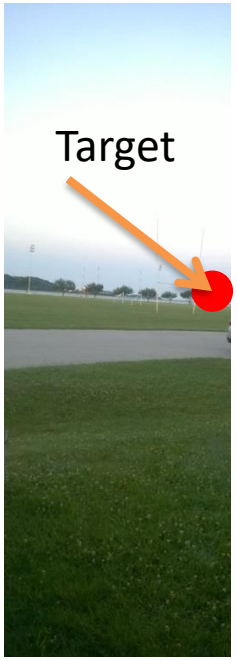
Testing site
US Naval Academy



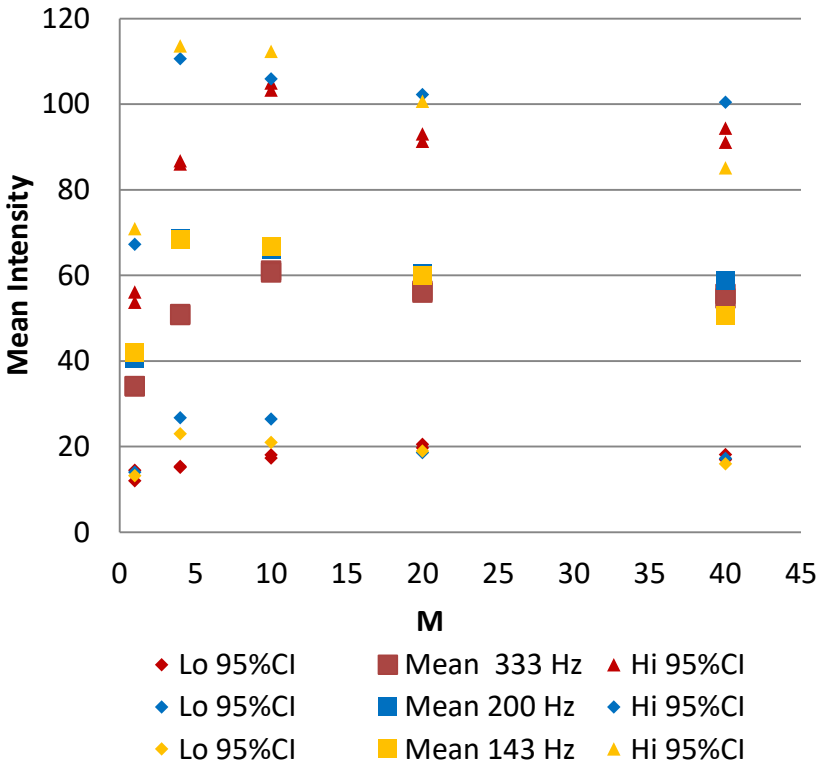
Environmental conditions

25-Jun-14	12:00 AM	1:00 AM	2:00 AM
Temp [C]	24	23	23
Pressure [hPa]	1016	1020	1021
Wind [km/h]	16/S	16/S	8/S

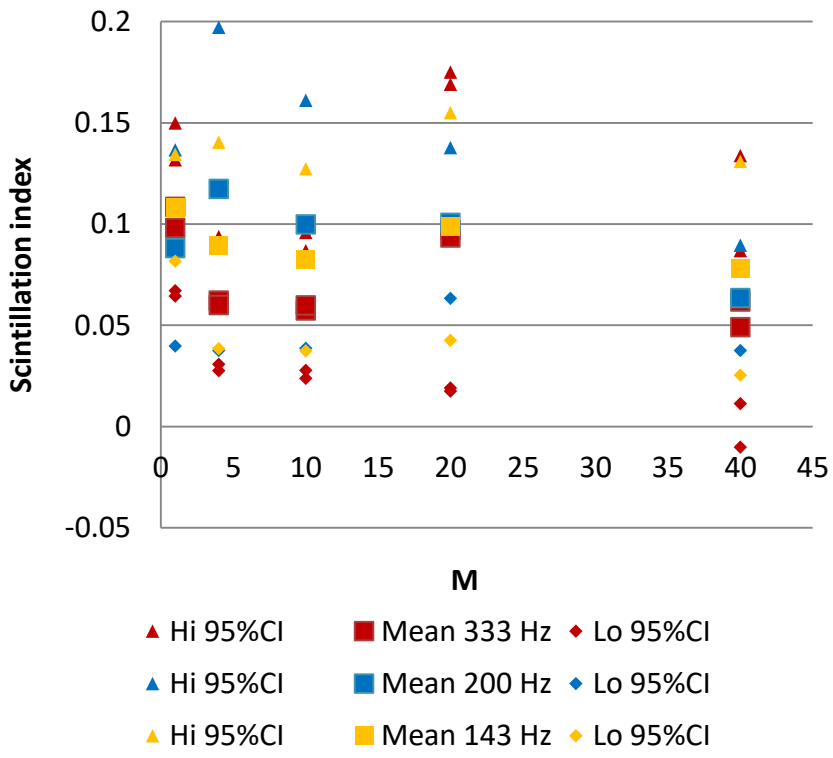
Terrestrial link of 260 m was set up on a grassy field near the Severn river. The tests ran during night in calm weather conditions. Low power red He-Ne laser, 2 mW, was the source and spatial light modulator was used to generate Multi Gaussian Schell Model spatially partially coherent beams.

Focused beam Correlation width 16
Stats analysis : MEAN

Mean Intensity

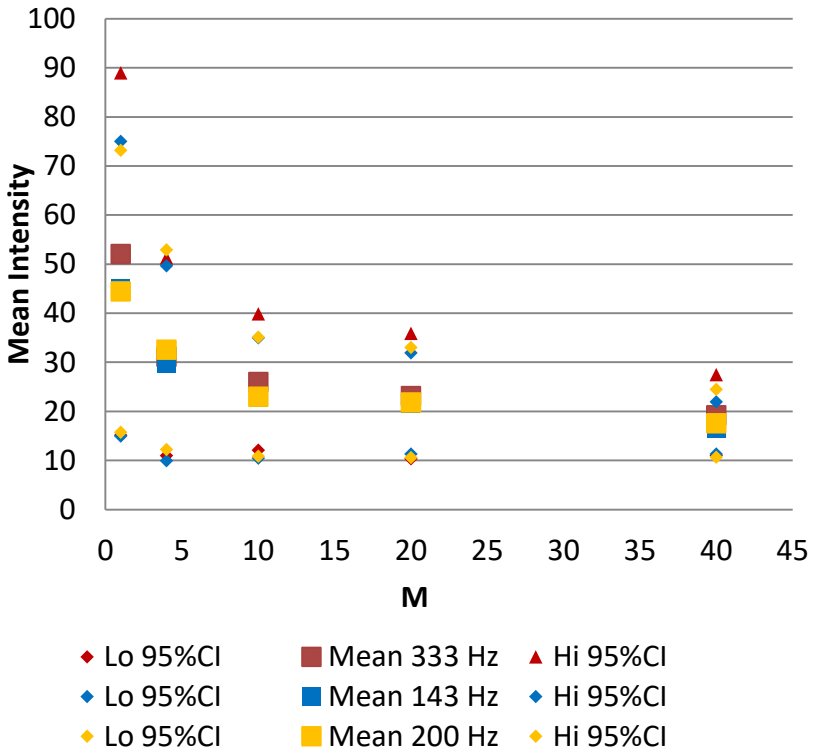


Scintillation index

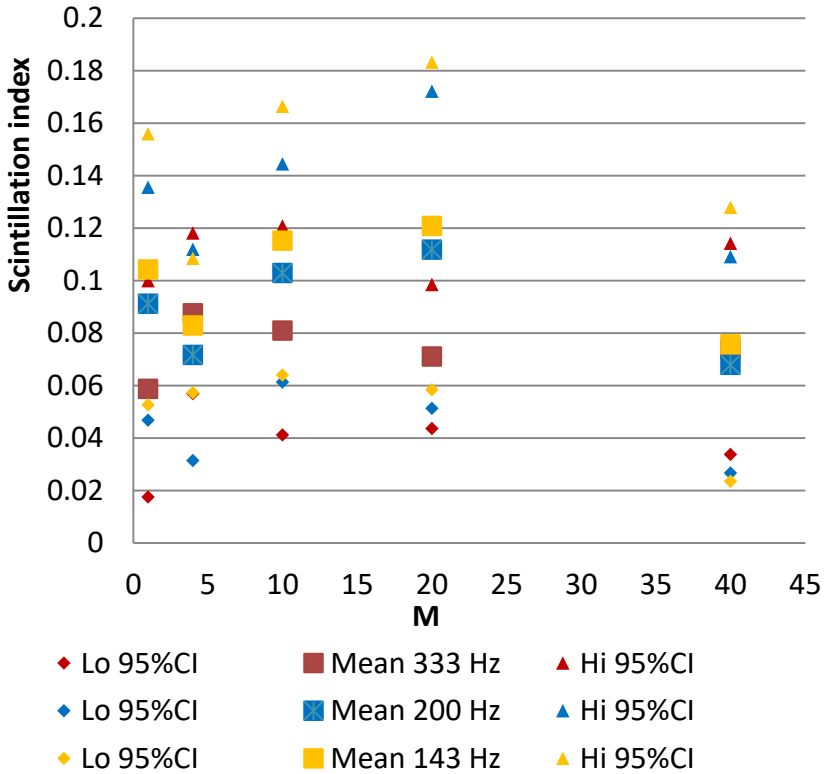


Diffused beam Correlation width 4
Stats analysis : MEAN

Mean Intensity

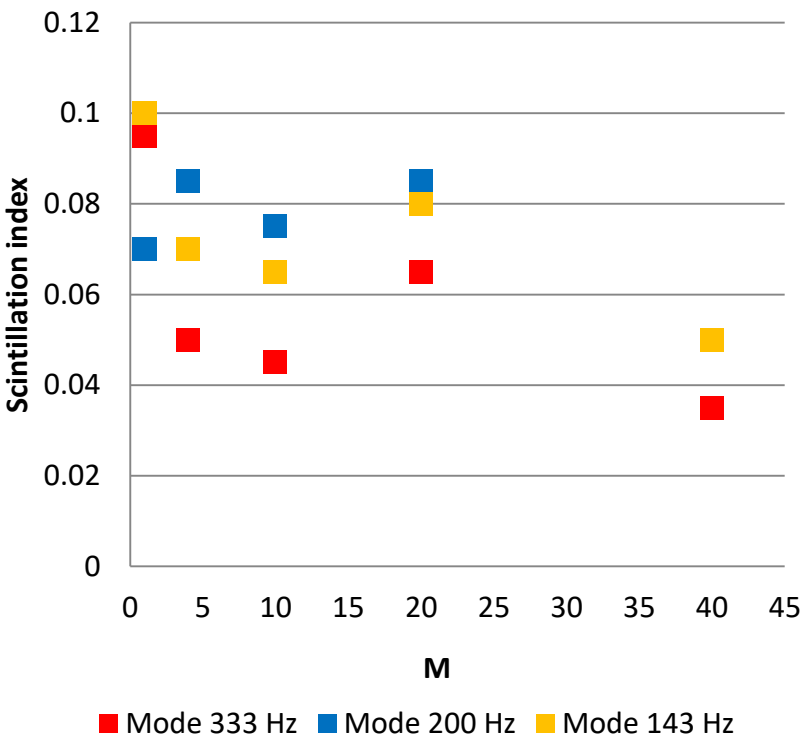


Scintillation index

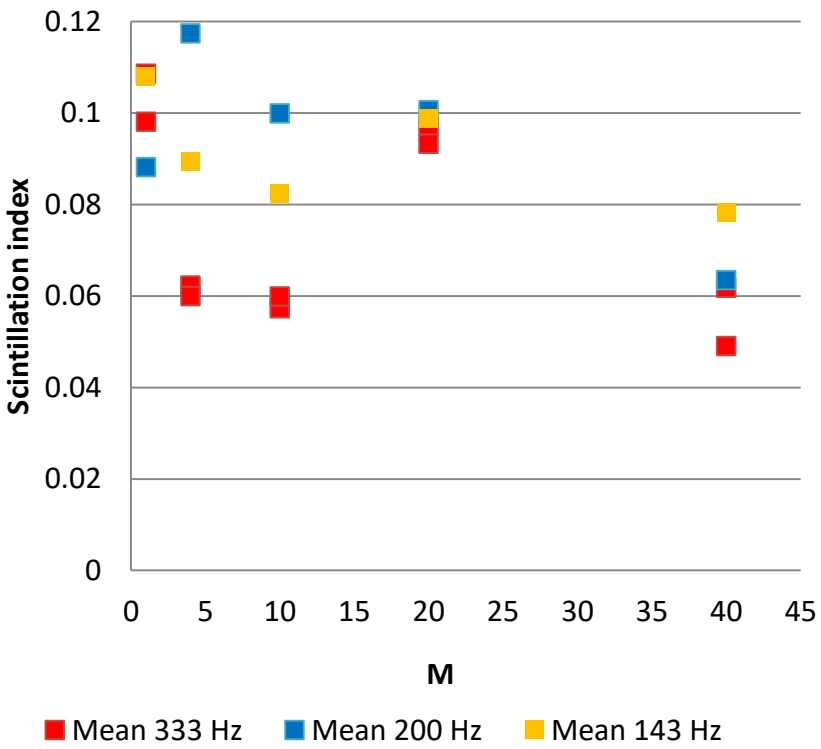


Focused beam
Correlation width 16

Calculations based on MODE

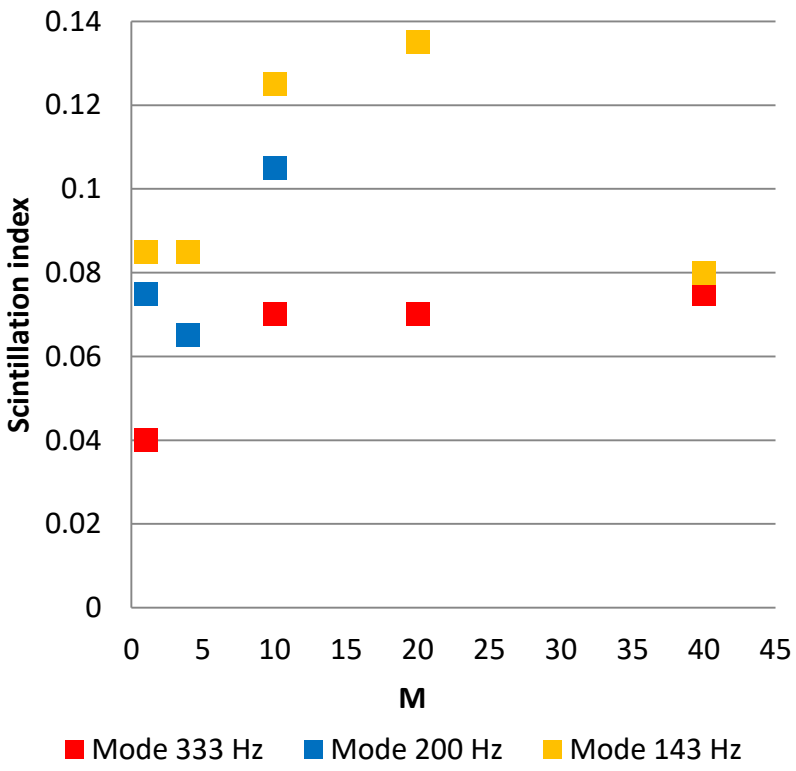


Calculations based on MEAN

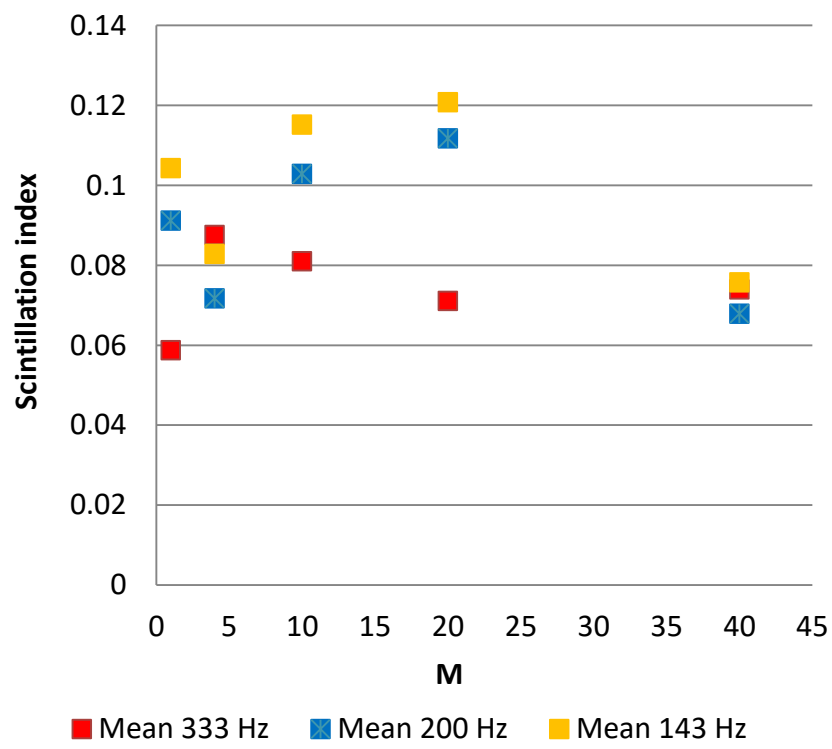


Diffused beam
Correlation width 4

Calculations based on MODE

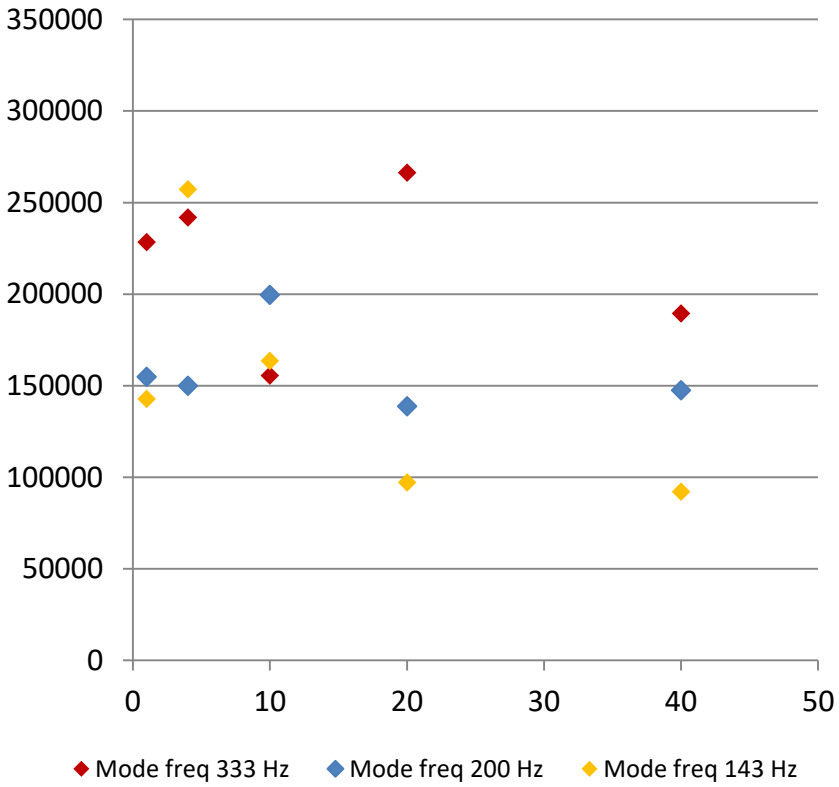


Calculations based on MEAN

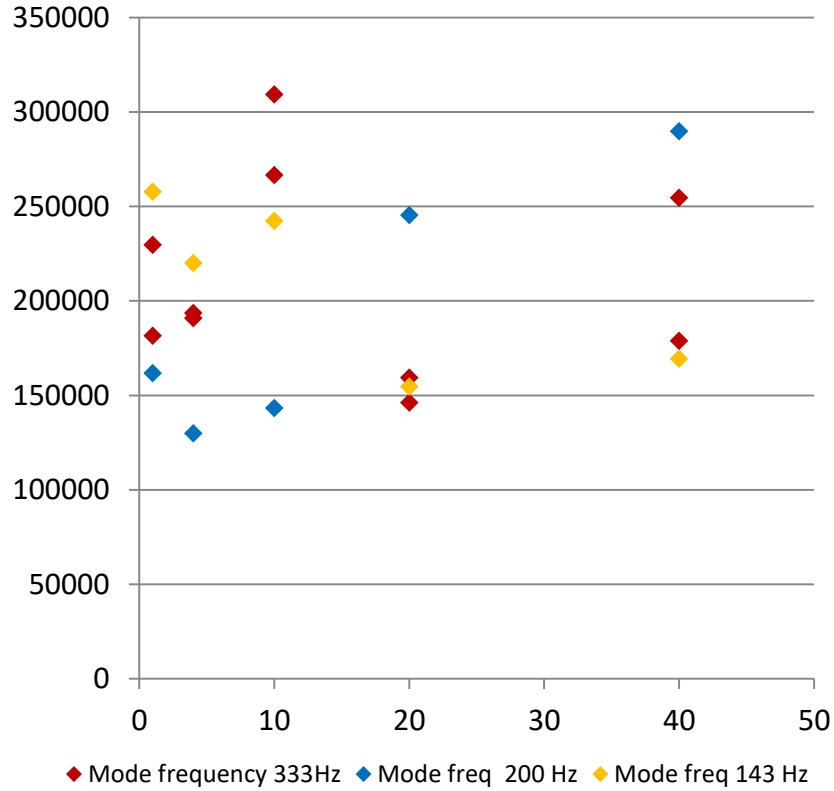


How many occurrences of the scintillation index are in the mode bin

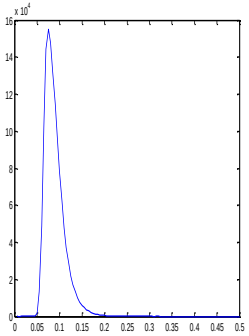
Correlation width 4



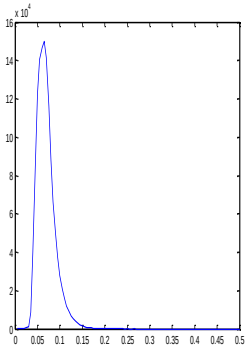
Correlation width 16



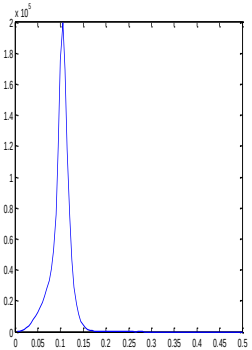
Scintillation index Data histogram
Correlation width 4, Cycling rate 200 Hz



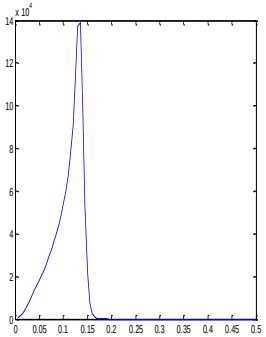
M=1



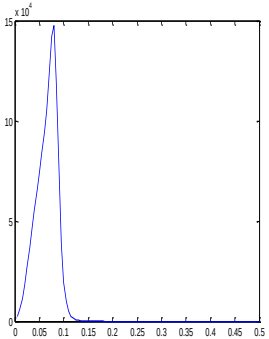
M=4



M=10



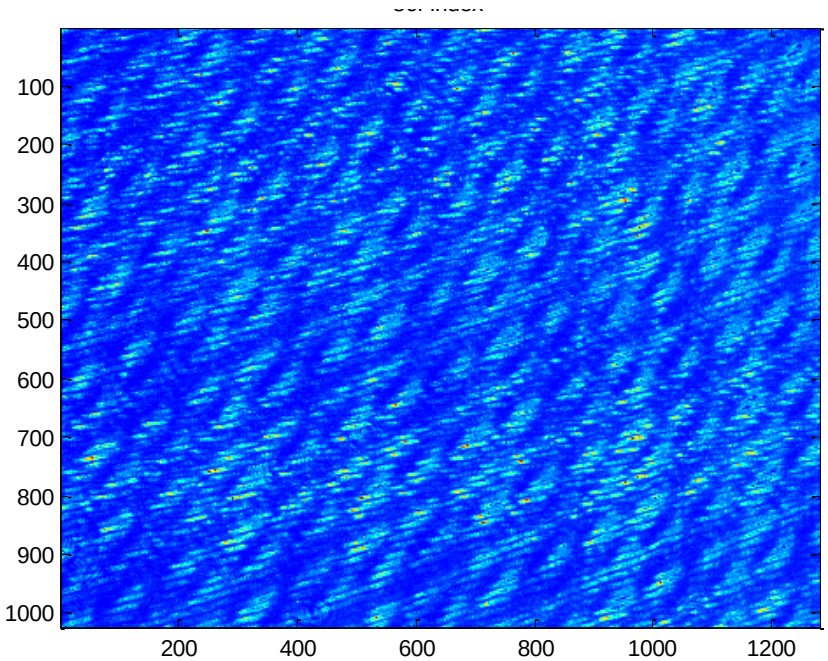
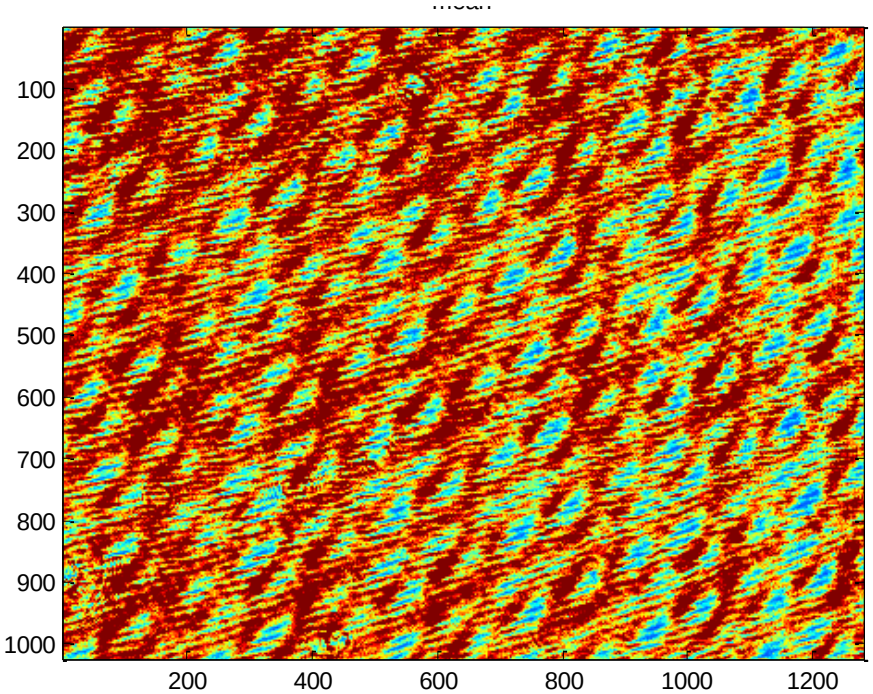
M=20



M=40

Data distribution across the sensor

Scintillation index



Mean intensity