

**EMVA 1288 Datasheet**

This datasheet describes the specification according to the standard 1288 Standard for Characterization and Presentation of Specification Data for Image Sensors and Cameras of European Machine Vision Association (EMVA) (See [www.standard1288.org](http://www.standard1288.org)).

Vendor	KAYA Instruments	Sensor diagonal	15.2mm
Model	Iron2518HS-C	Sensor	GMAX2518
Camera type	Color	Sensor type	CMOS
Date	05-Mar-2023 17:40:16	Shutter type	Global
Data type	Single	Overlap capabilities	Overlapping
Sensor type	CMOS	Frame rate	100 Hz
Lens category	C-Mount	Exposure control	by irradiance
Resolution	4504 x 4096 ,10 bits	Exposure time	3000.125 $\mu$ s
Pixel size	2.5 $\mu$ m x 2.5 $\mu$ m	Illumination	Variable with constant exposure time
Maximum readout rate	139 fps	Irradiation Steps	50
Dark current compensation	No	Irradiation calibration accuracy	-
Interface type	CXP-12	Irradiation measurement error	-
Serial number	2305061	Standart version	4.0 Linear
Firmware version	2.2.2-2023.2.27	Light source	Integrating Sphere

International Distributors



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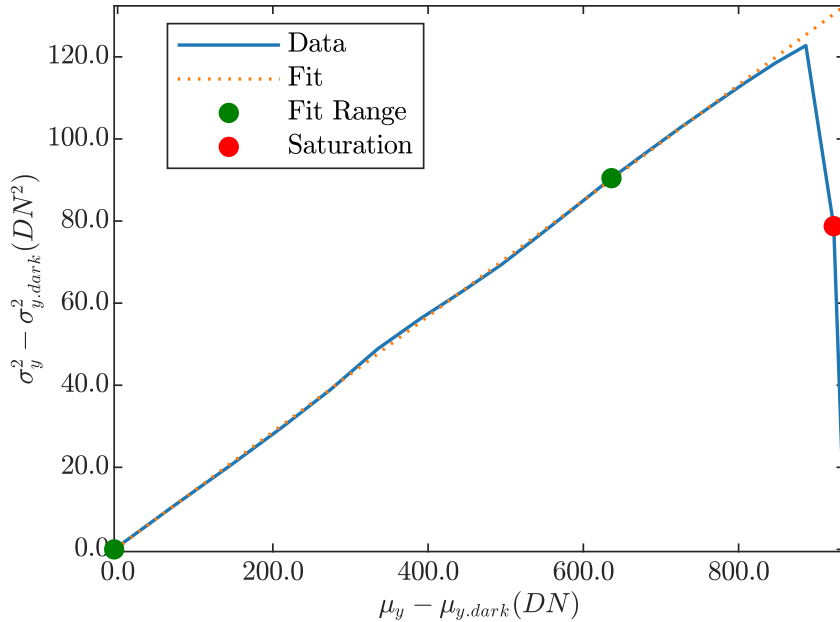


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+44 115 855 7883, [info@zerif.co.uk](mailto:info@zerif.co.uk)  
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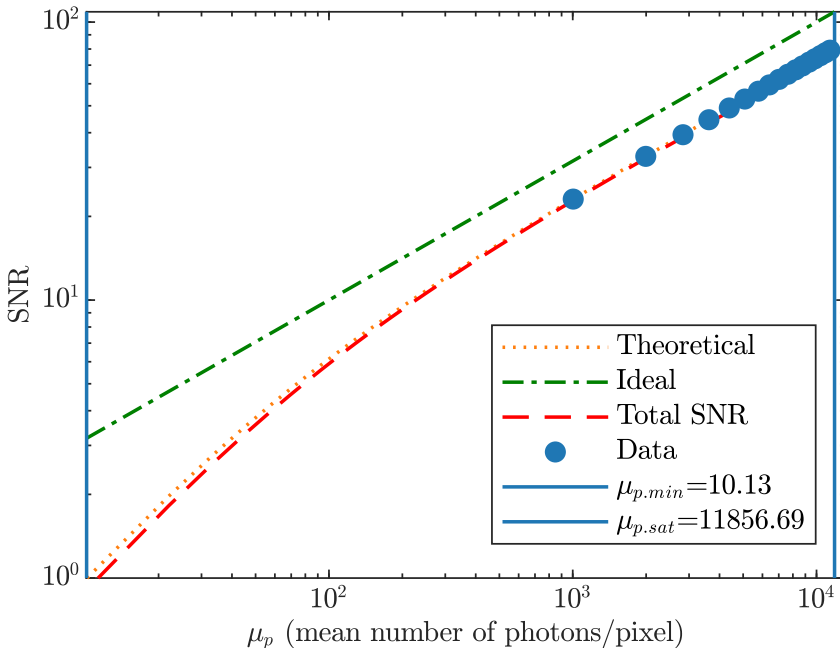
Summary Sheet for Operation Point 1 at a Wavelength of 520 nm

Camera setting		Operation point parameters	
Gain	1.75	Environmental temperature	22.12
Black level	-500	Camera body temperature	41.56
		Sensor temperature	47
		Processor temperature	48

Photon Transfer

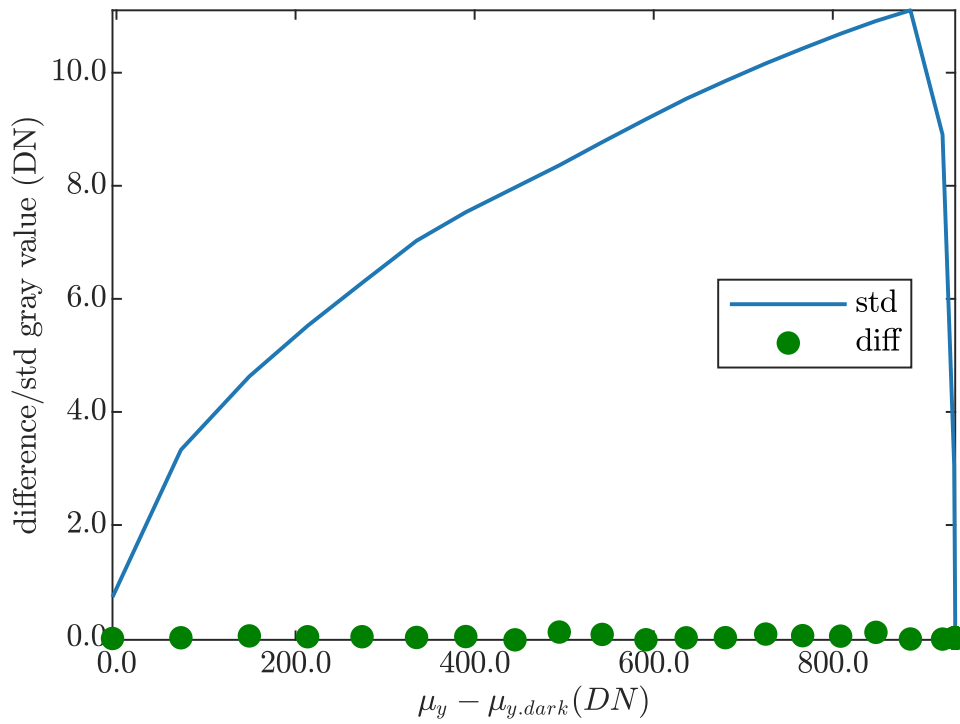


Signal-to-Noise Ratio

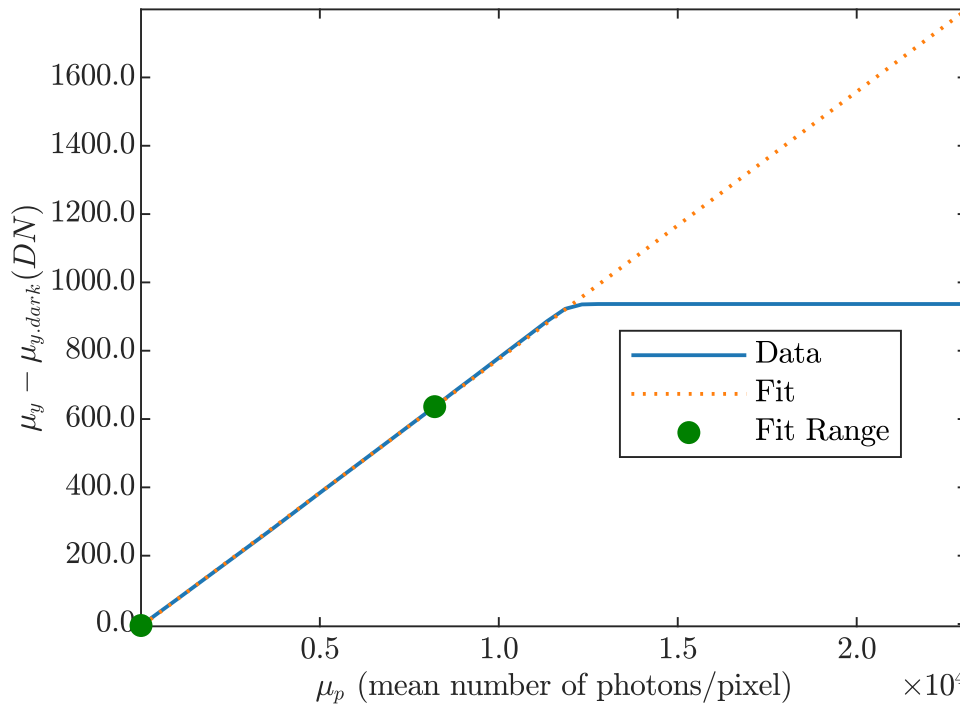


Performance		
<b>Quantum efficiency</b>		
$\eta$	55.536	%
<b>System gain</b>		
K	0.14093	DN/e <sup>-</sup>
1/K	7.0959	e <sup>-</sup> /DN
<b>Temporal dark noise</b>		
$\sigma_d$	4.7016	e <sup>-</sup>
$\sigma_{y.dark}$	0.72274	DN
<b>Signal-to-noise ratio</b>		
SNR <sub>max</sub>	81.1464	
	38.1854	dB
	6.3425	bit
1/SNR <sub>max</sub>	1.2323	%
<b>Absolute sensitivity threshold</b>		
$\mu_{e.min}$	5.6285	e <sup>-</sup>
$\mu_{e.min.area}$	0.90056	e <sup>-</sup> /μm <sup>2</sup>
<b>Saturation capacity</b>		
$\mu_{e.sat}$	6584.732	e <sup>-</sup>
$\mu_{e.sat.area}$	1053.5571	e <sup>-</sup> /μm <sup>2</sup>
<b>Dynamic range</b>		
DR	1169.8915	
	61.3629	dB
	10.1922	bit
<b>Spatial nonuniformities</b>		
DSNU <sub>1288</sub>	2.5644	e <sup>-</sup>
DSNU <sub>1288.col</sub>	1.2474	e <sup>-</sup>
DSNU <sub>1288.row</sub>	1.5876	e <sup>-</sup>
DSNU <sub>1288.pix</sub>	1.581	e <sup>-</sup>
PRNU <sub>1288</sub>	0.50353	%
PRNU <sub>1288.col</sub>	0.19404	%
PRNU <sub>1288.row</sub>	0.022092	%
PRNU <sub>1288.pix</sub>	0.46411	%
<b>Linearity error</b>		
LE	0.0027794	%
<b>Dark current</b>		
$\mu_{l.mean}$	1054.5596	e <sup>-</sup> /s
$\mu_{l.var}$	NaN	e <sup>-</sup> /s

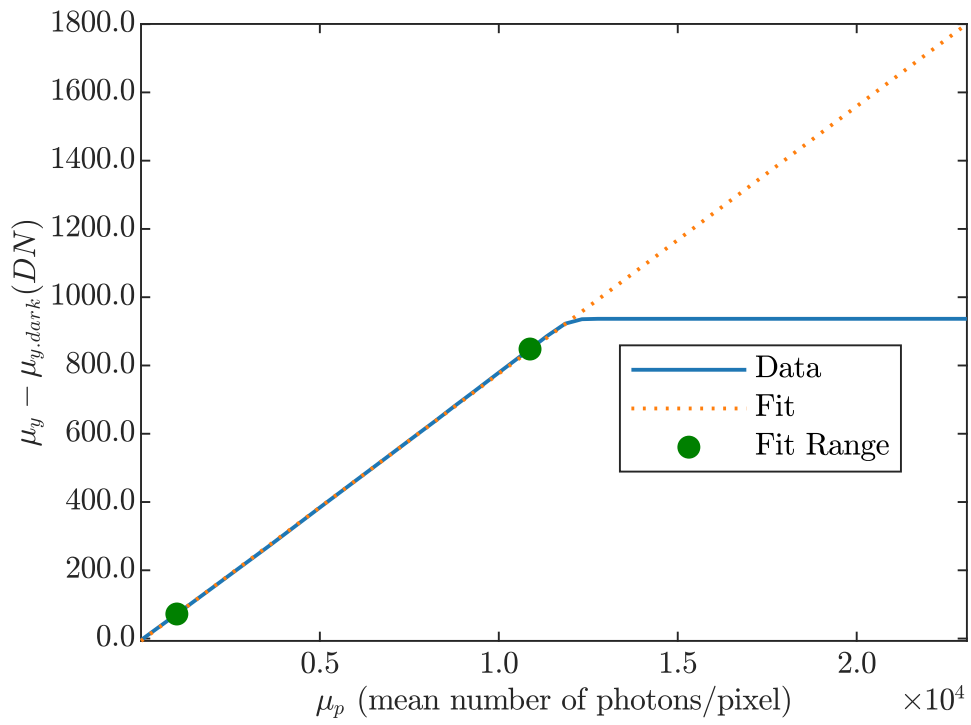
### Stability check



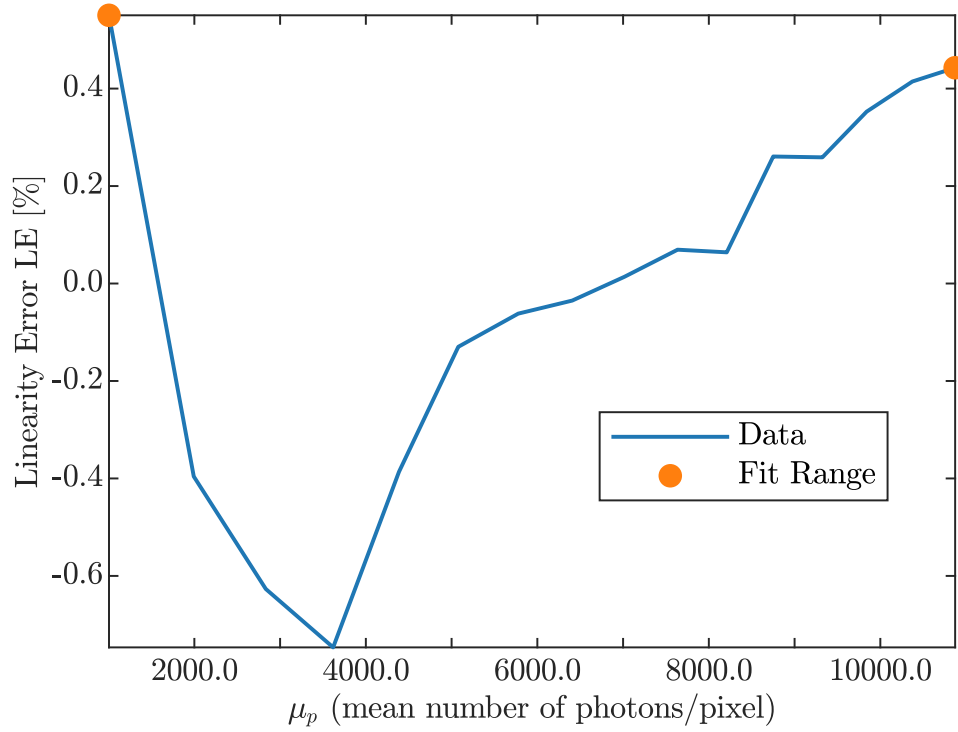
### Sensitivity



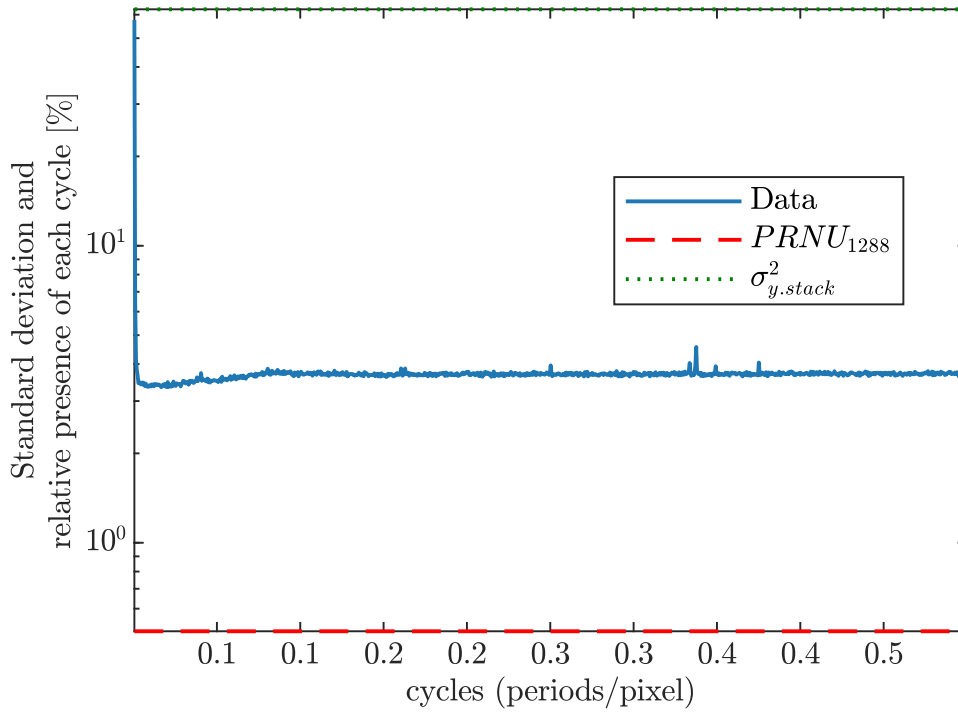
### Linearity



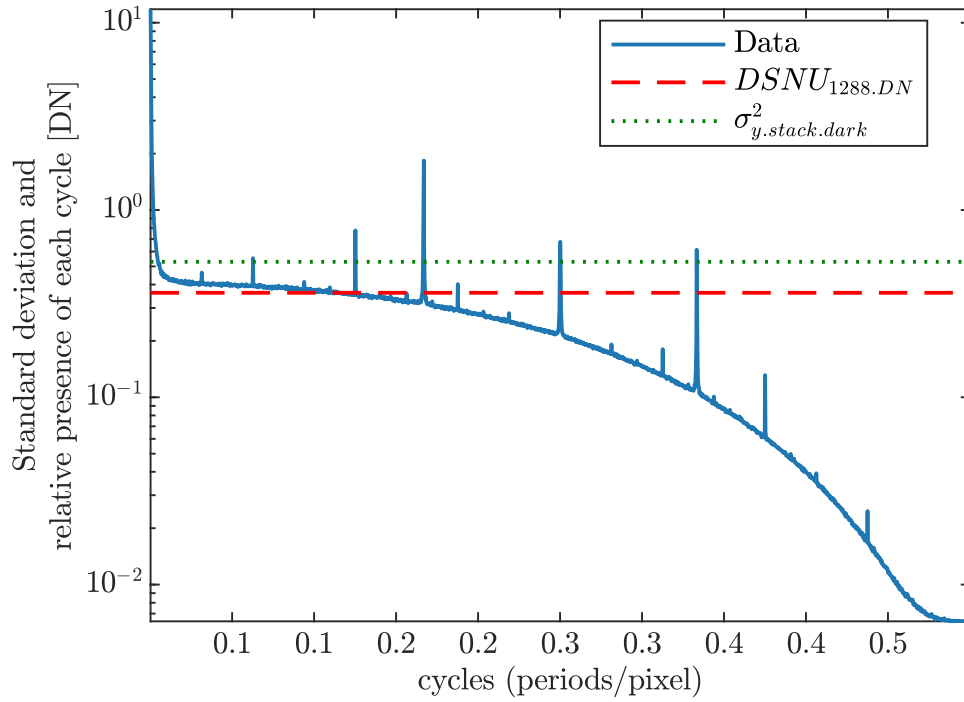
Deviation Linearity



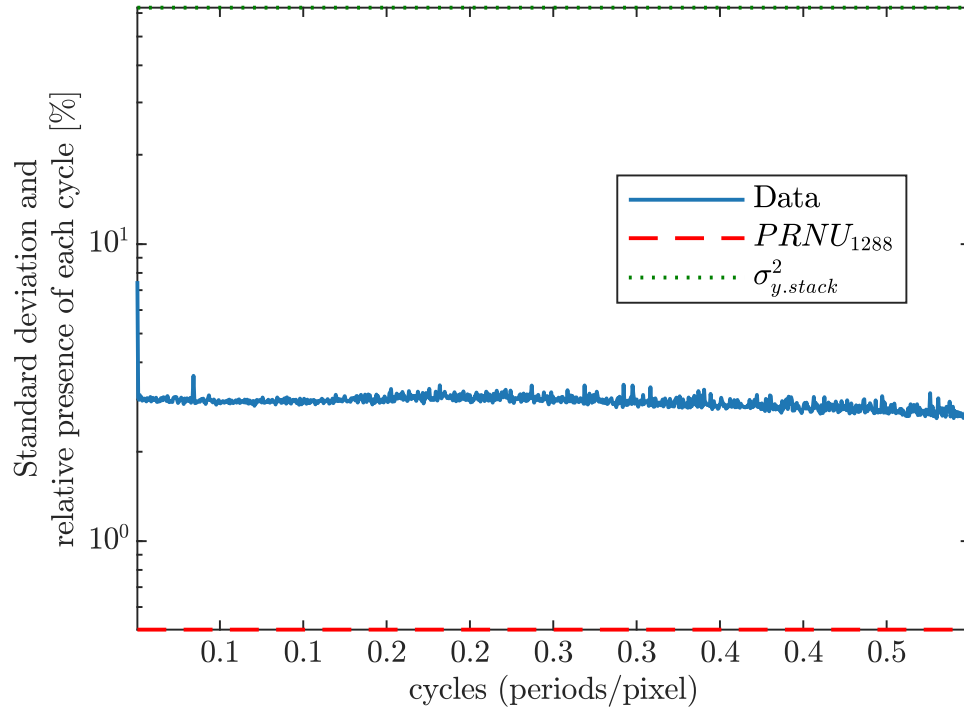
Horizontal Spectrogram PRNU



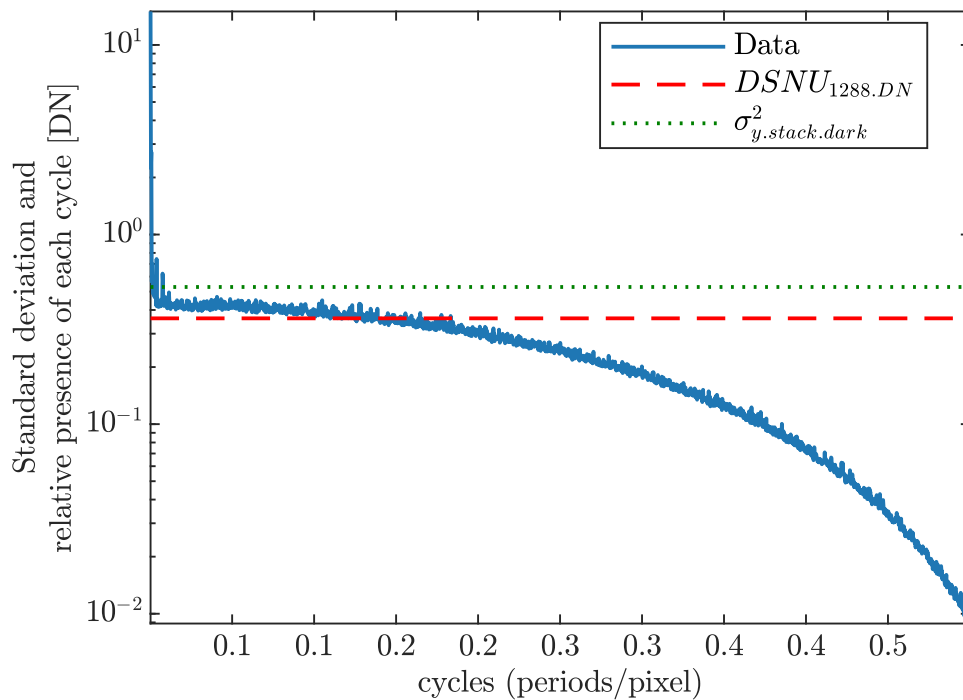
### Horizontal Spectrogram DSNU



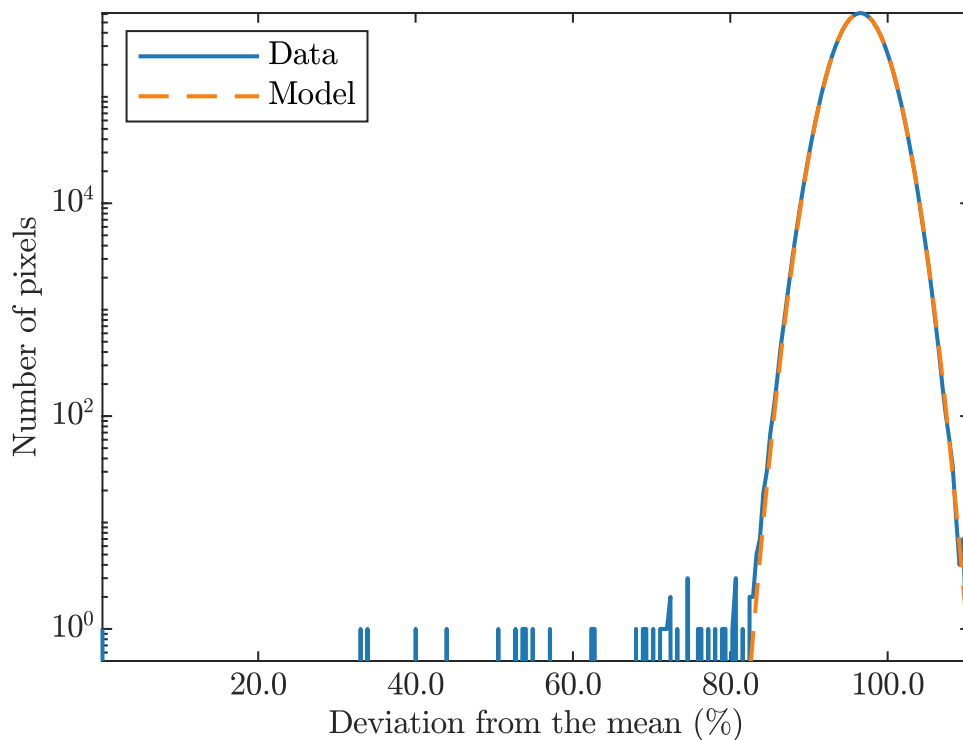
### Vertical Spectrogram PRNU



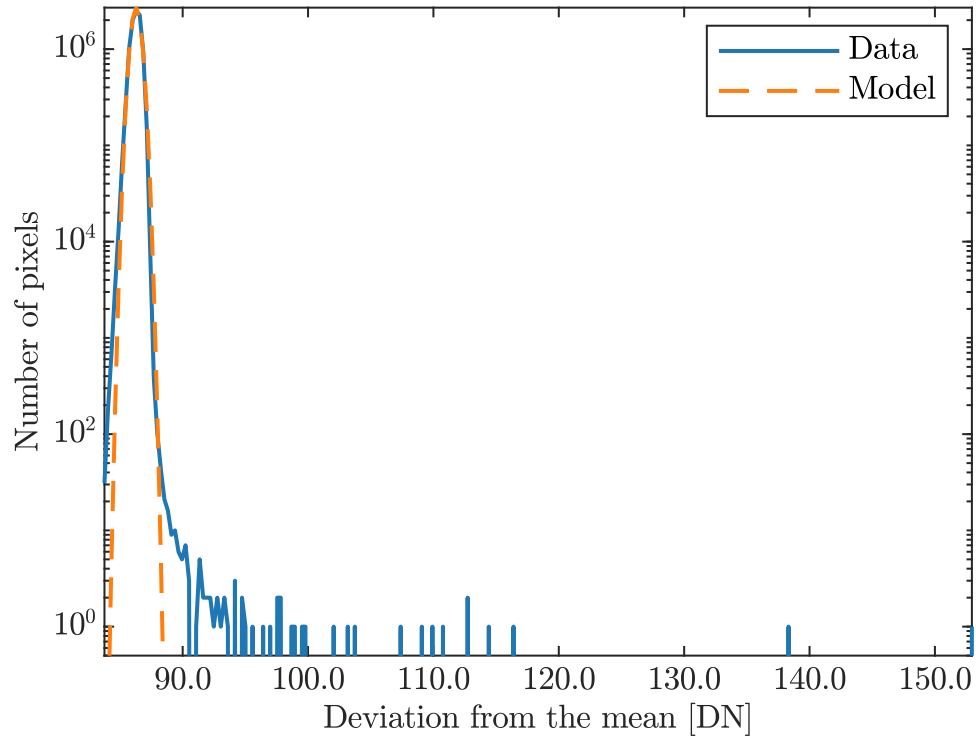
### Vertical Spectrogram DSNU



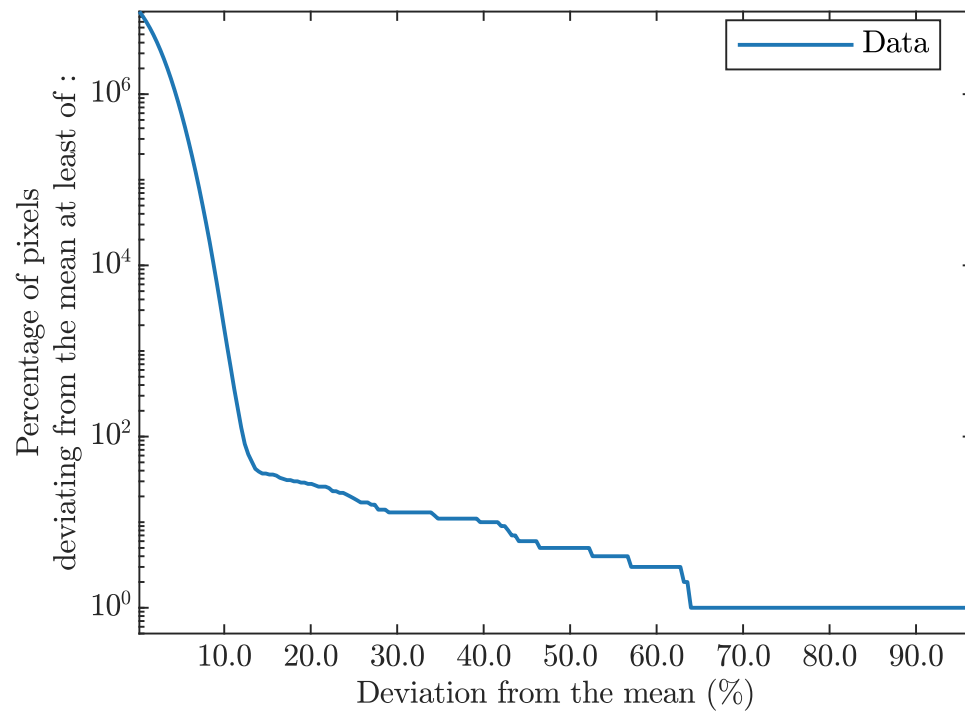
### Logarithmic Histogram PRNU



### Logarithmic Histogram DSNU

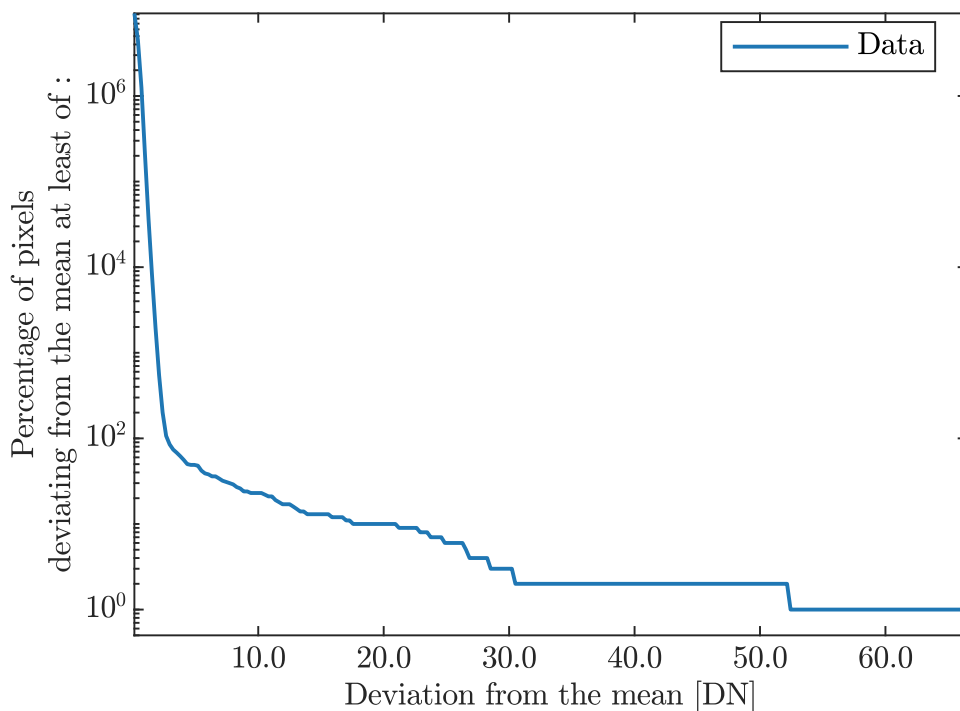


### Accumulated Log Histogram PRNU

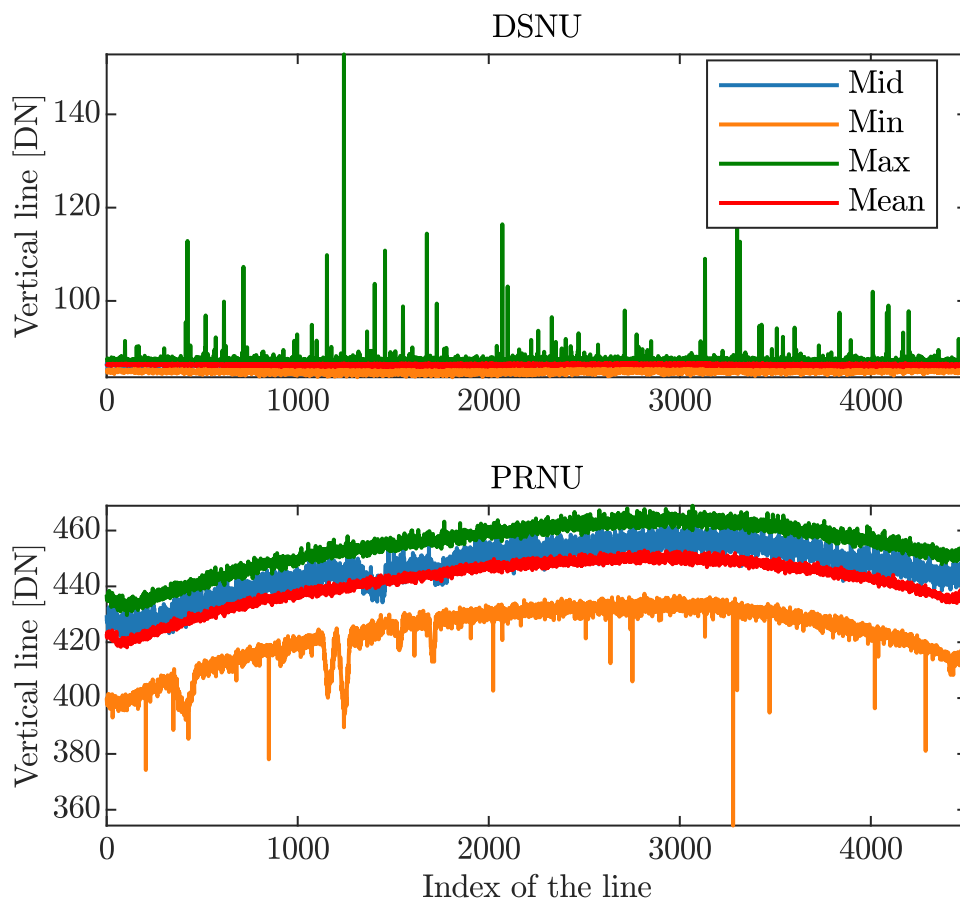




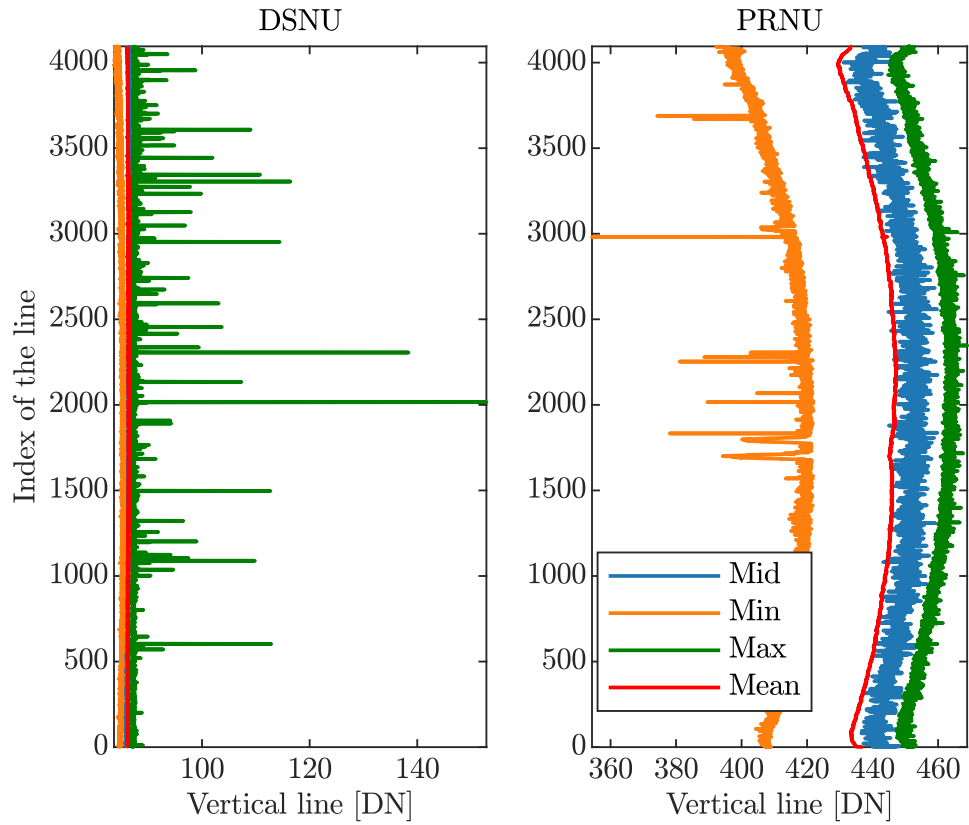
### Accumulated Log Histogram DSNU



### Horizontal Profile



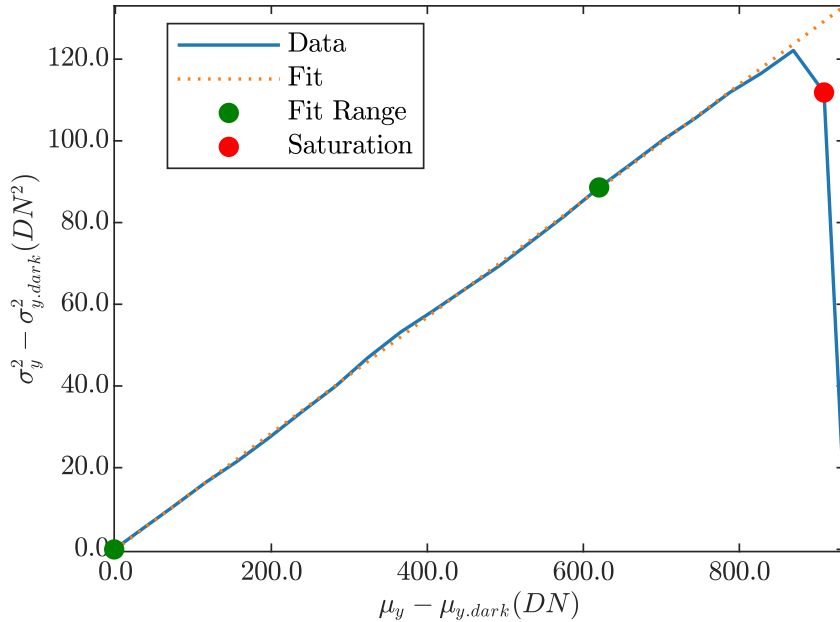
### Vertical Profile



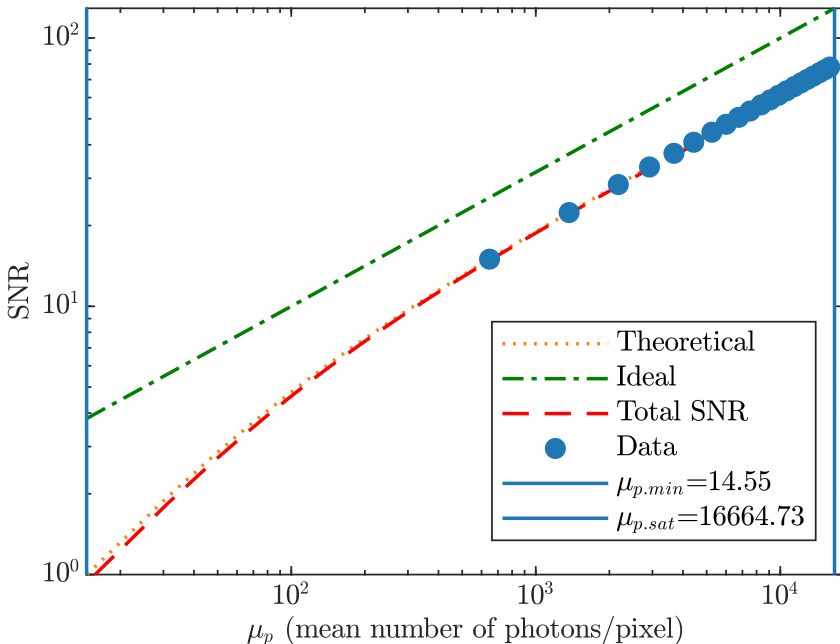
Summary Sheet for Operation Point 2 at a Wavelength of 632 nm

Camera setting		Operation point parameters	
Gain	1.75	Environmental temperature	21.31
Black level	-500	Camera body temperature	41.98
		Sensor temperature	50
		Processor temperature	49

Photon Transfer

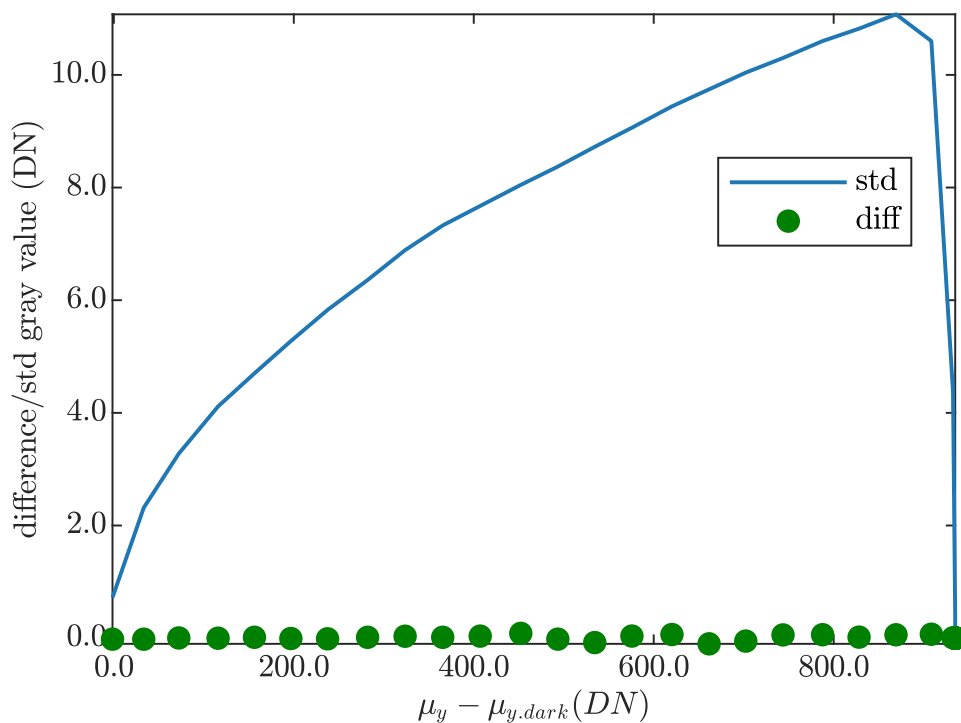


Signal-to-Noise Ratio

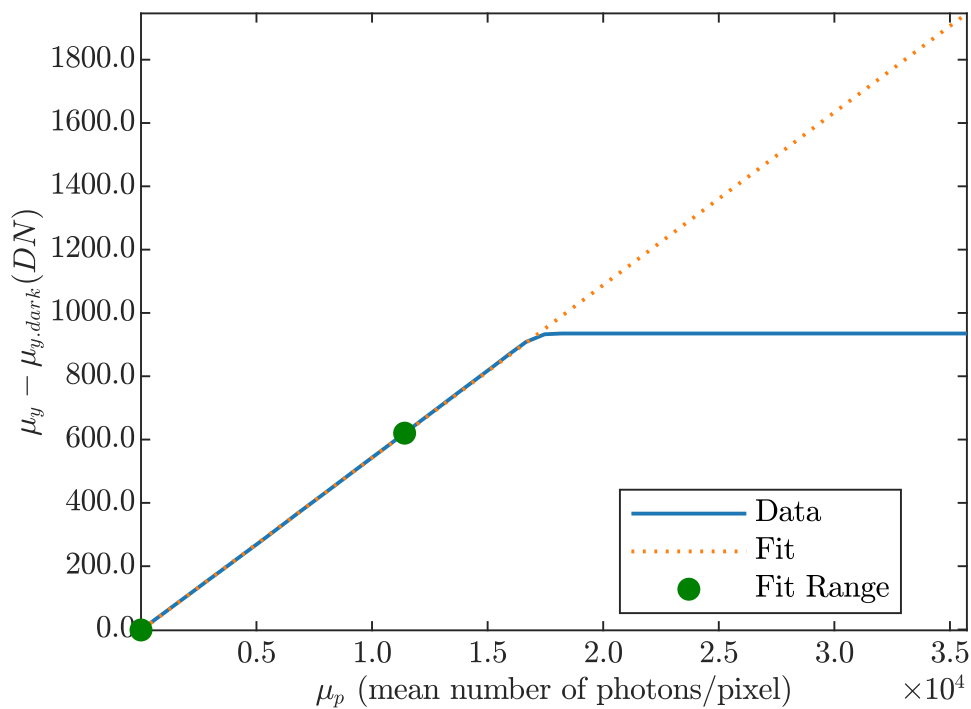


Performance		
<b>Quantum efficiency</b>		
$\eta$	38.3183	%
<b>System gain</b>		
K	0.14236	DN/e <sup>-</sup>
1/K	7.0246	e <sup>-</sup> /DN
<b>Temporal dark noise</b>		
$\sigma_d$	4.6544	e <sup>-</sup>
$\sigma_{y,dark}$	0.72274	DN
<b>Signal-to-noise ratio</b>		
SNR <sub>max</sub>	79.9102	
	38.052	dB
	6.3203	bit
1/SNR <sub>max</sub>	1.2514	%
<b>Absolute sensitivity threshold</b>		
$\mu_{e,min}$	5.5769	e <sup>-</sup>
$\mu_{e,min,area}$	0.89231	e <sup>-</sup> /μm <sup>2</sup>
<b>Saturation capacity</b>		
$\mu_{e,sat}$	6385.6412	e <sup>-</sup>
$\mu_{e,sat,area}$	1021.7026	e <sup>-</sup> /μm <sup>2</sup>
<b>Dynamic range</b>		
DR	1145.0106	
	61.1762	dB
	10.1611	bit
<b>Spatial nonuniformities</b>		
DSNU <sub>1288</sub>	2.1295	e <sup>-</sup>
DSNU <sub>1288,col</sub>	0.93865	e <sup>-</sup>
DSNU <sub>1288,row</sub>	0.85223	e <sup>-</sup>
DSNU <sub>1288,pix</sub>	1.7109	e <sup>-</sup>
PRNU <sub>1288</sub>	0.51864	%
PRNU <sub>1288,col</sub>	0.16305	%
PRNU <sub>1288,row</sub>	0.038787	%
PRNU <sub>1288,pix</sub>	0.49081	%
<b>Linearity error</b>		
LE	0.0014826	%
<b>Dark current</b>		
$\mu_{l,mean}$	1054.5596	e <sup>-</sup> /s
$\mu_{l,var}$	NaN	e <sup>-</sup> /s

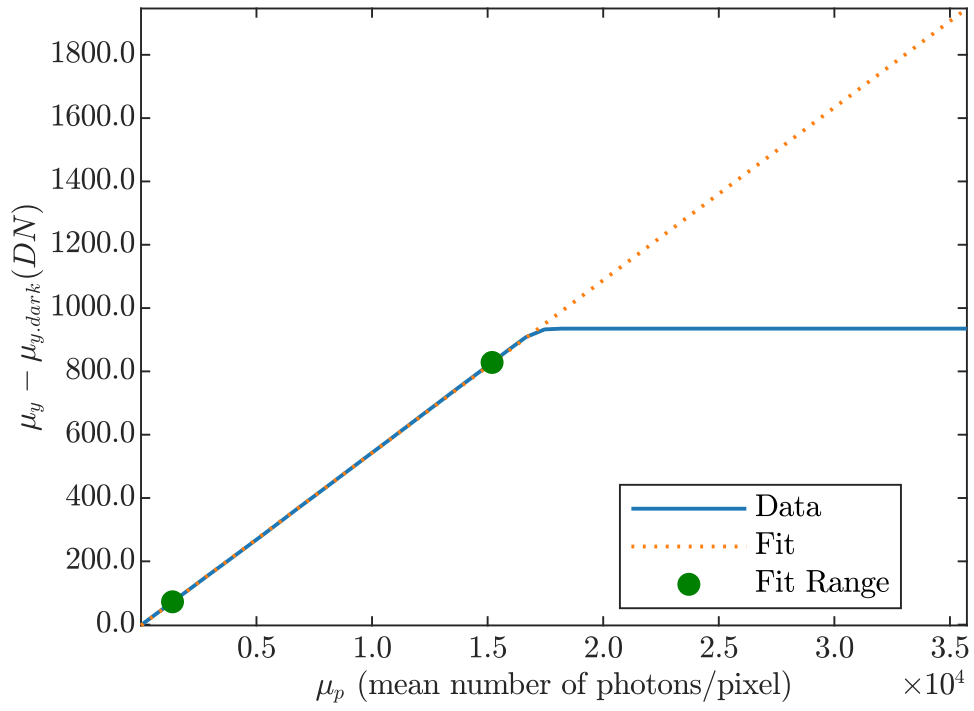
### Stability check



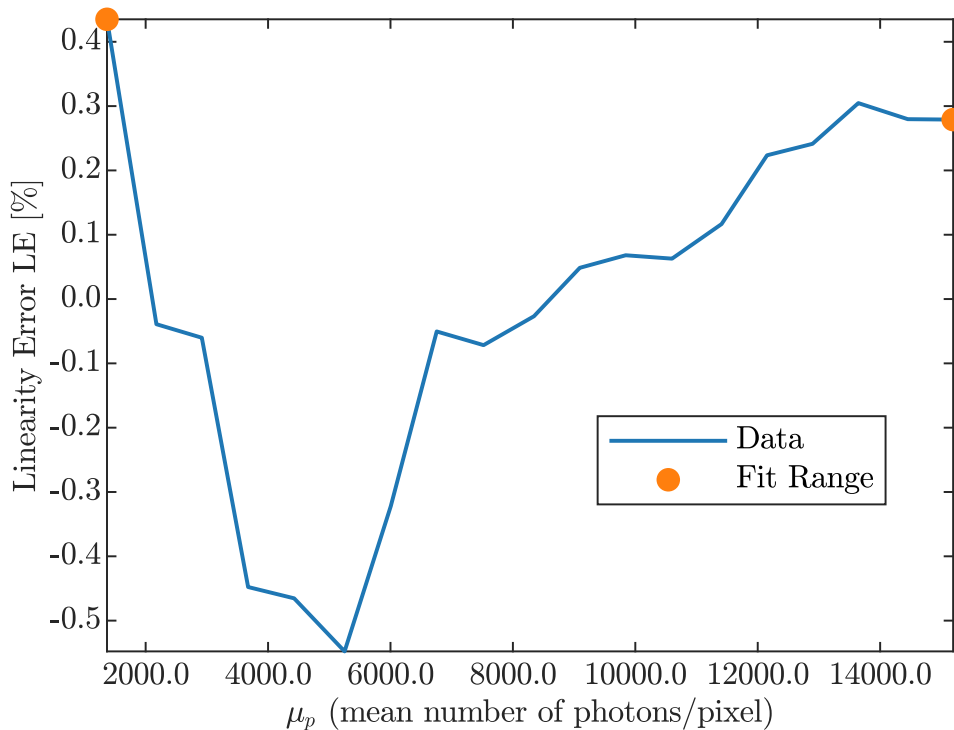
### Sensitivity



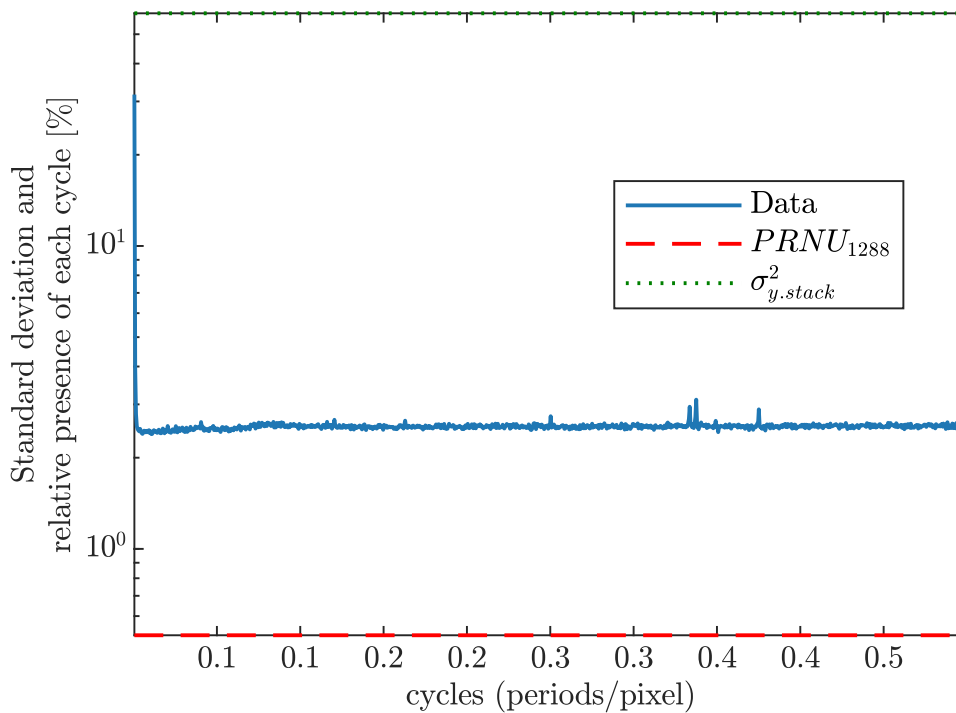
### Linearity



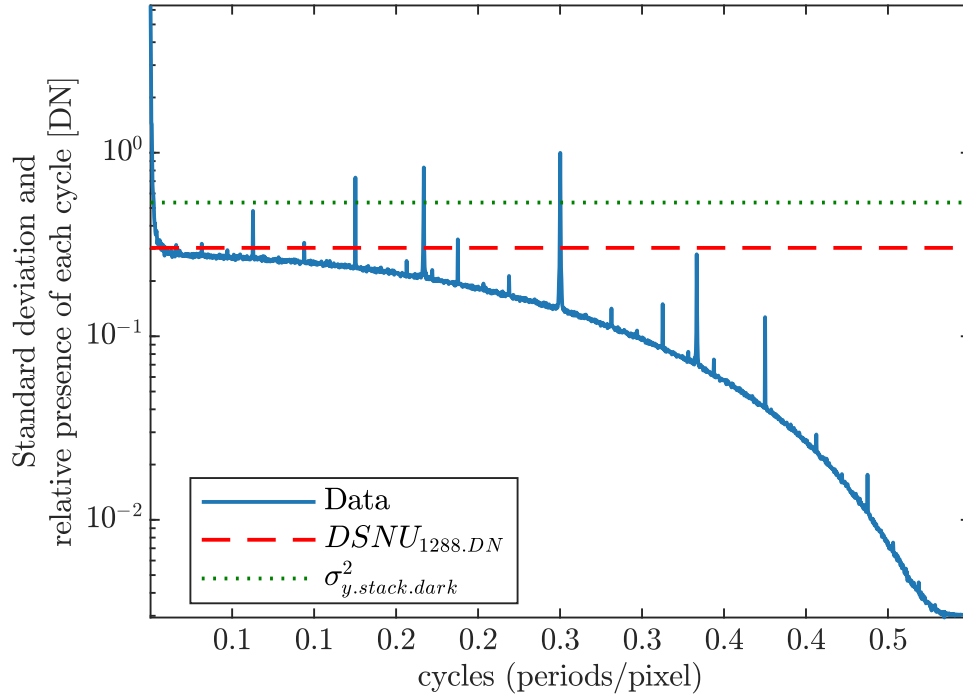
### Deviation Linearity



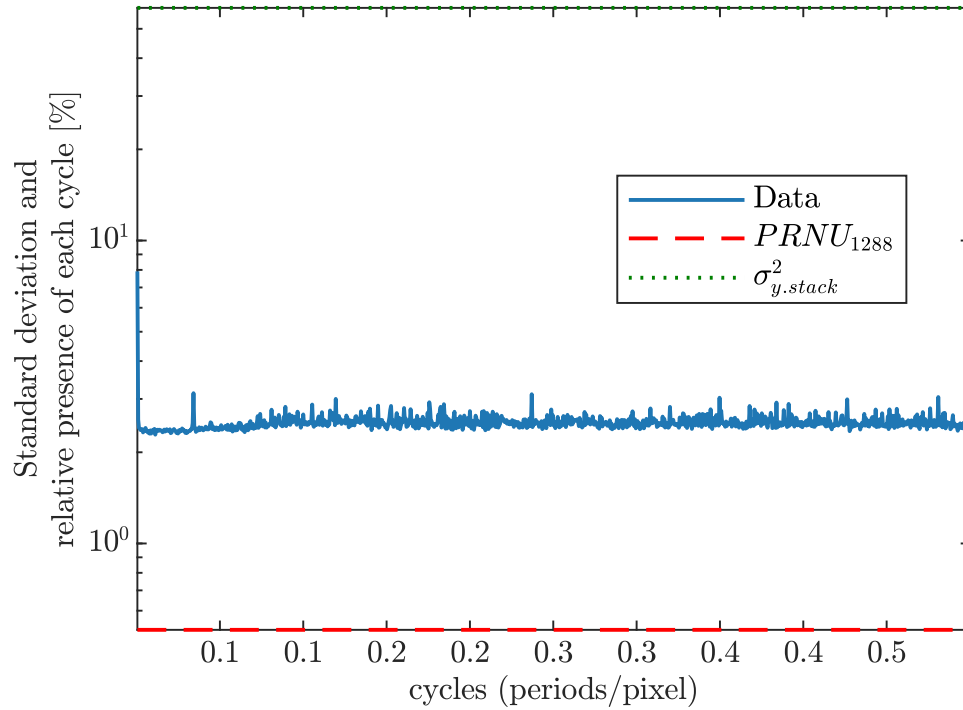
### Horizontal Spectrogram PRNU



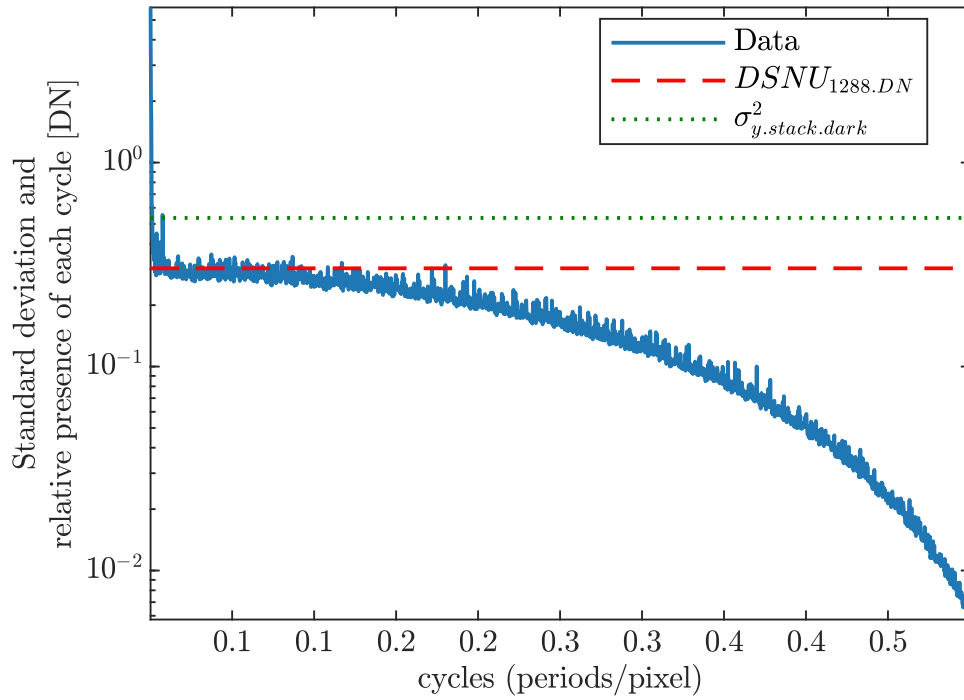
### Horizontal Spectrogram DSNU



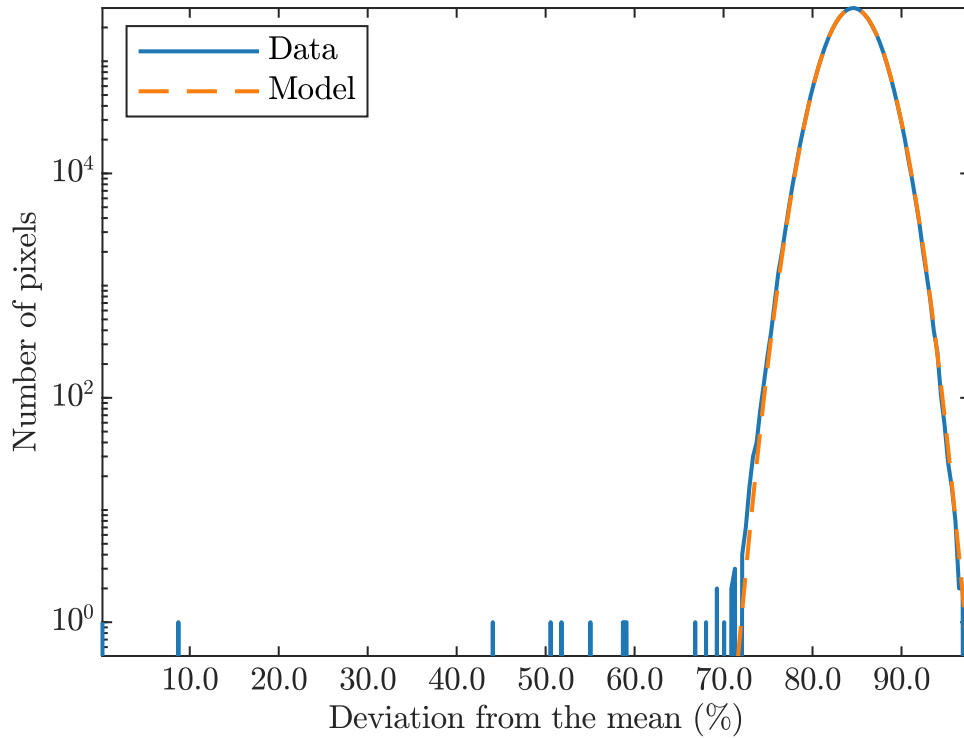
### Vertical Spectrogram PRNU



### Vertical Spectrogram DSNU

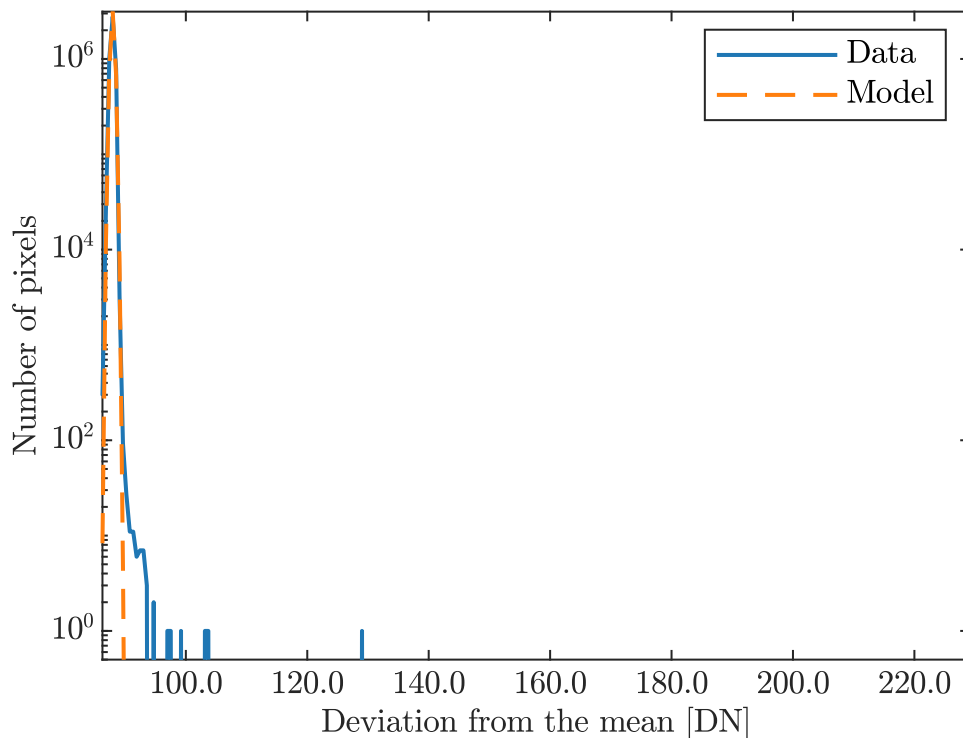


### Logarithmic Histogram PRNU

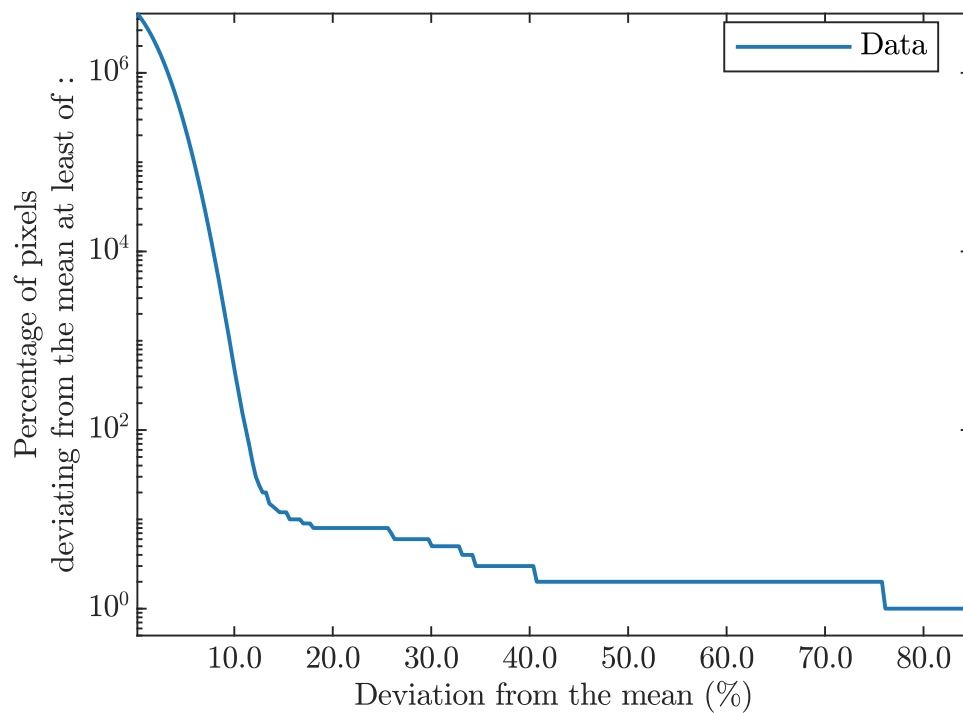




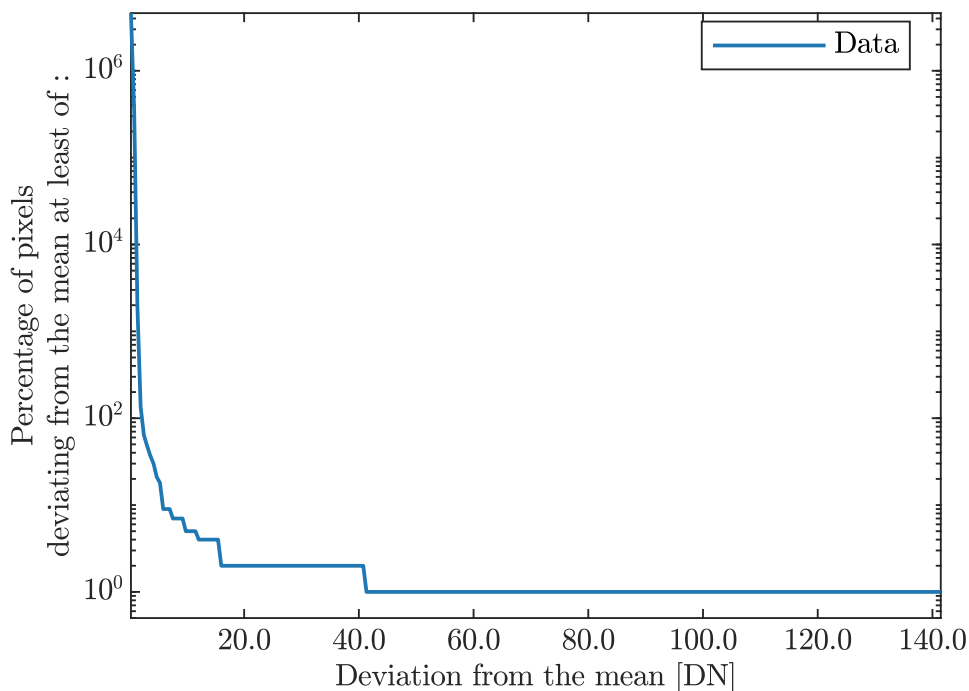
### Logarithmic Histogram DSNU



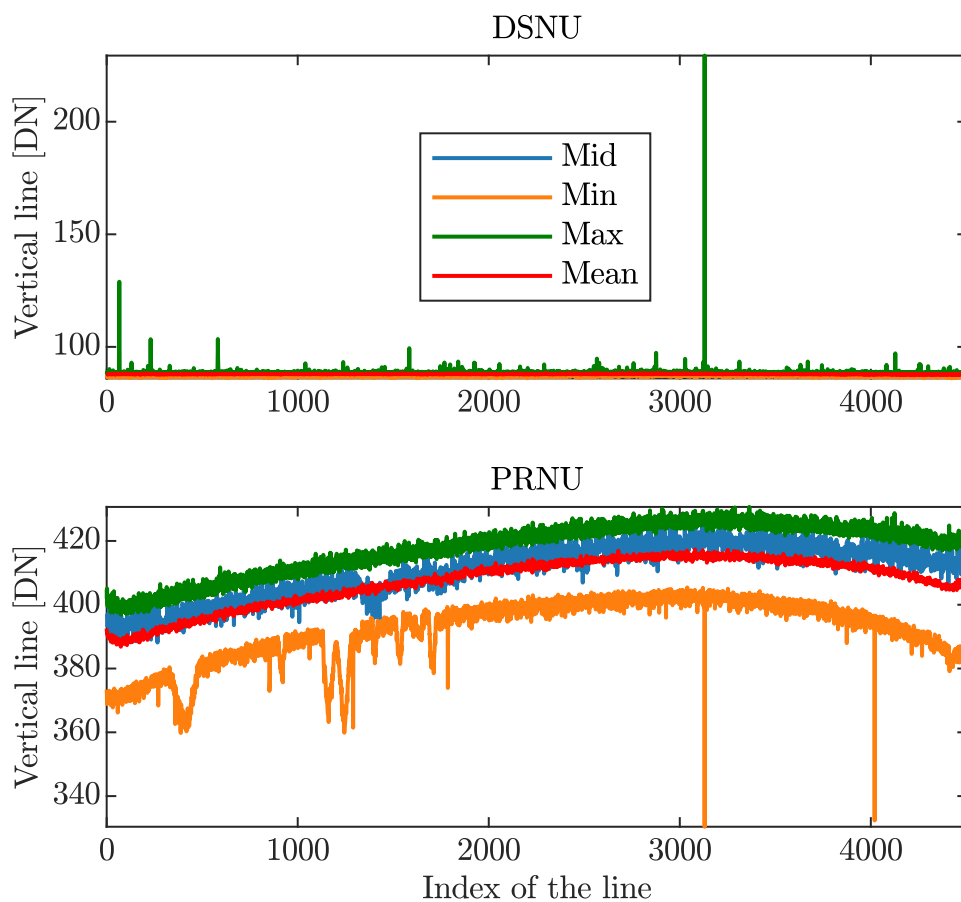
### Accumulated Log Histogram PRNU



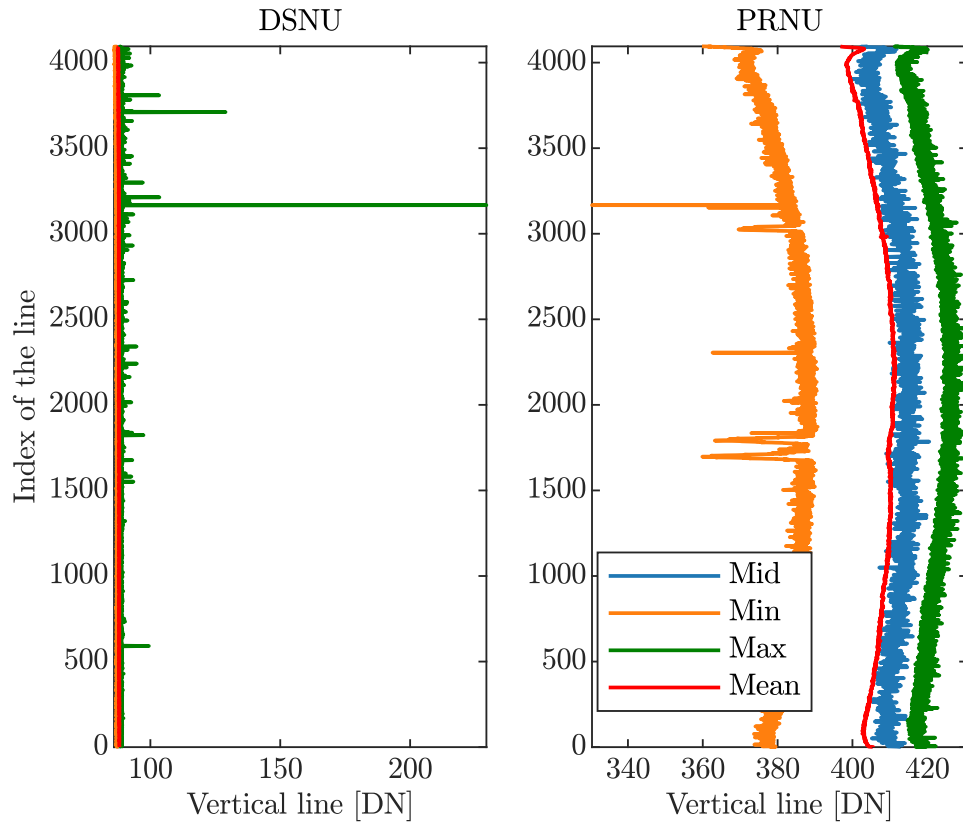
### Accumulated Log Histogram DSNU



### Horizontal Profile



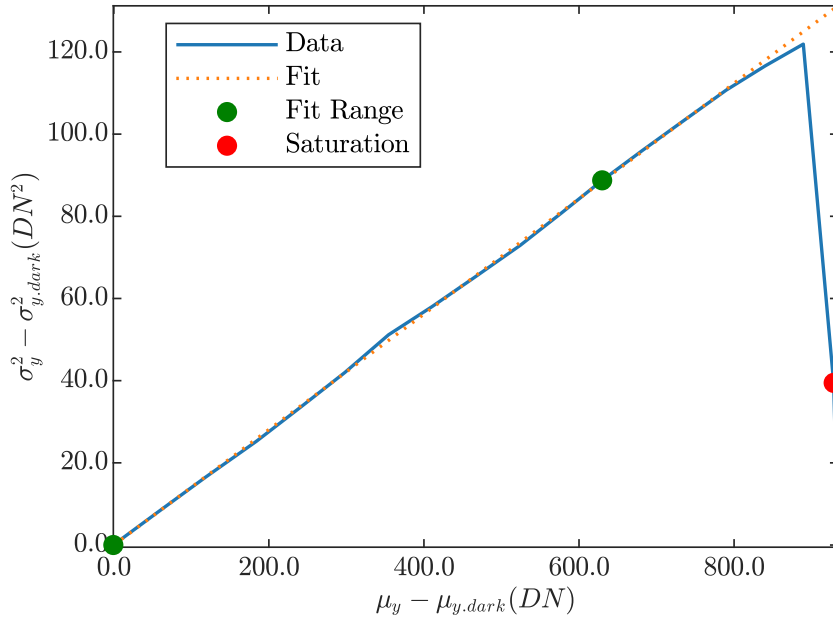
### Vertical Profile



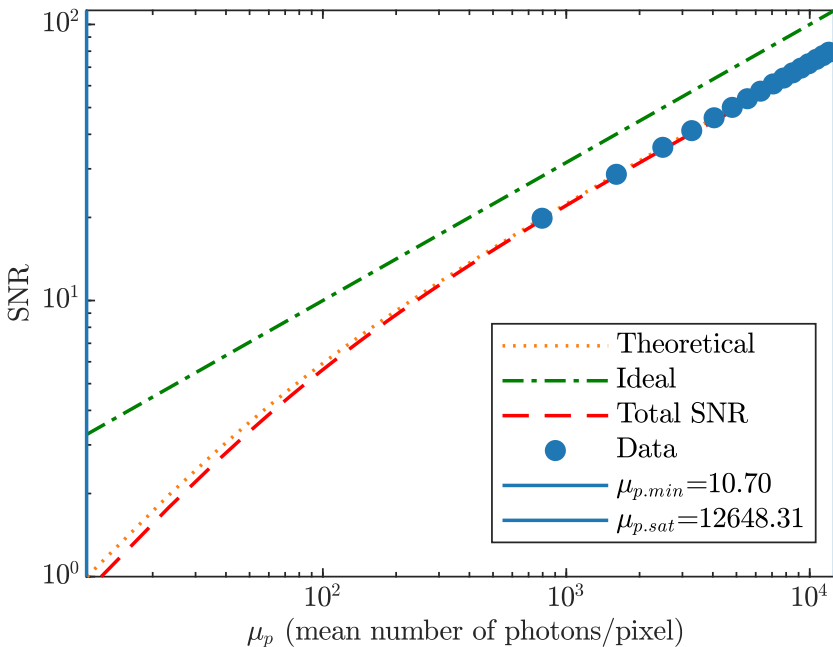
Summary Sheet for Operation Point 3 at a Wavelength of 448 nm

Camera setting		Operation point parameters	
Gain	1.75	Environmental temperature	21.43
Black level	-500	Camera body temperature	42.87
		Sensor temperature	52
		Processor temperature	51

Photon Transfer



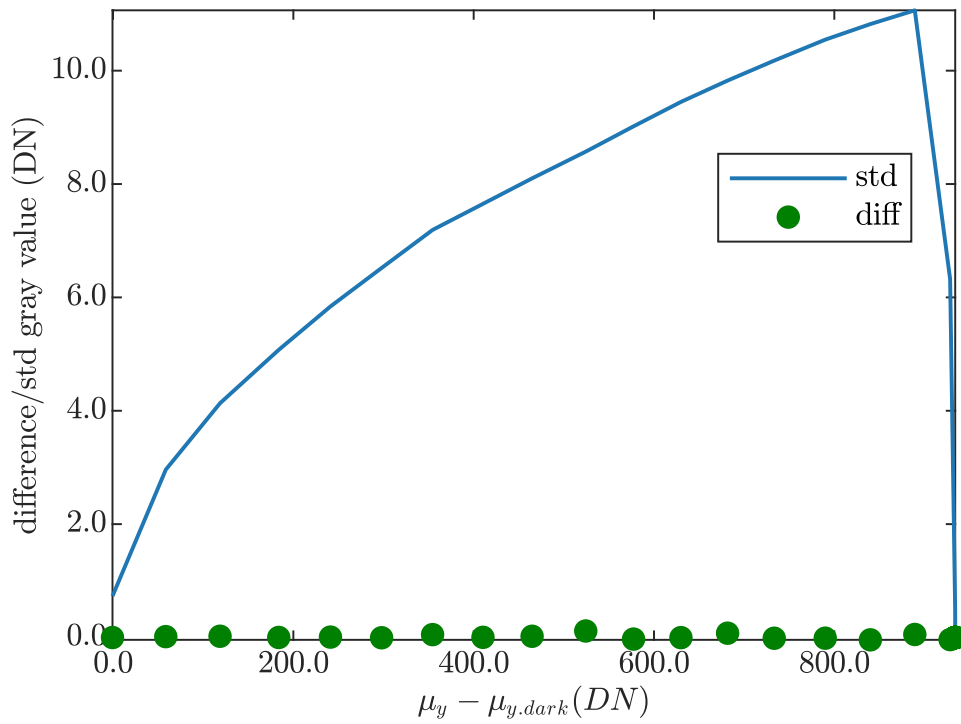
Signal-to-Noise Ratio



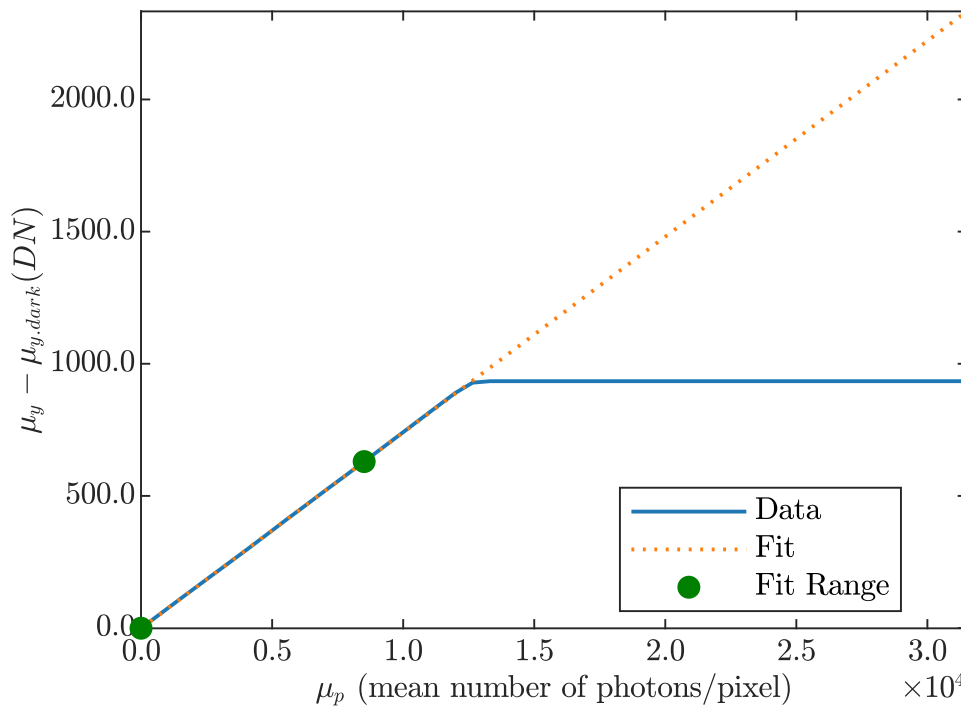
Performance

Quantum efficiency	
$\eta$	52.7315 %
System gain	
K	0.14048 DN/e <sup>-</sup>
1/K	7.1184 e <sup>-</sup> /DN
Temporal dark noise	
$\sigma_d$	4.7165 e <sup>-</sup>
$\sigma_{y,dark}$	0.72274 DN
Signal-to-noise ratio	
SNR <sub>max</sub>	81.6679
	38.241 dB
	6.3517 bit
1/SNR <sub>max</sub>	1.2245 %
Absolute sensitivity threshold	
$\mu_{e,min}$	5.6447 e <sup>-</sup>
$\mu_{e,min,area}$	0.90316 e <sup>-</sup> /μm <sup>2</sup>
Saturation capacity	
$\mu_{e,sat}$	6669.6378 e <sup>-</sup>
$\mu_{e,sat,area}$	1067.142 e <sup>-</sup> /μm <sup>2</sup>
Dynamic range	
DR	1181.5678
	61.4492 dB
	10.2065 bit
Spatial nonuniformities	
DSNU <sub>1288</sub>	2.9682 e <sup>-</sup>
DSNU <sub>1288,col</sub>	0.93426 e <sup>-</sup>
DSNU <sub>1288,row</sub>	2.0142 e <sup>-</sup>
DSNU <sub>1288,pix</sub>	1.9698 e <sup>-</sup>
PRNU <sub>1288</sub>	0.49319 %
PRNU <sub>1288,col</sub>	0.15544 %
PRNU <sub>1288,row</sub>	0.034674 %
PRNU <sub>1288,pix</sub>	0.46677 %
Linearity error	
LE	0.00090168 %
Dark current	
$\mu_{l,mean}$	1054.5596 e <sup>-</sup> /s
$\mu_{l,var}$	NaN e <sup>-</sup> /s

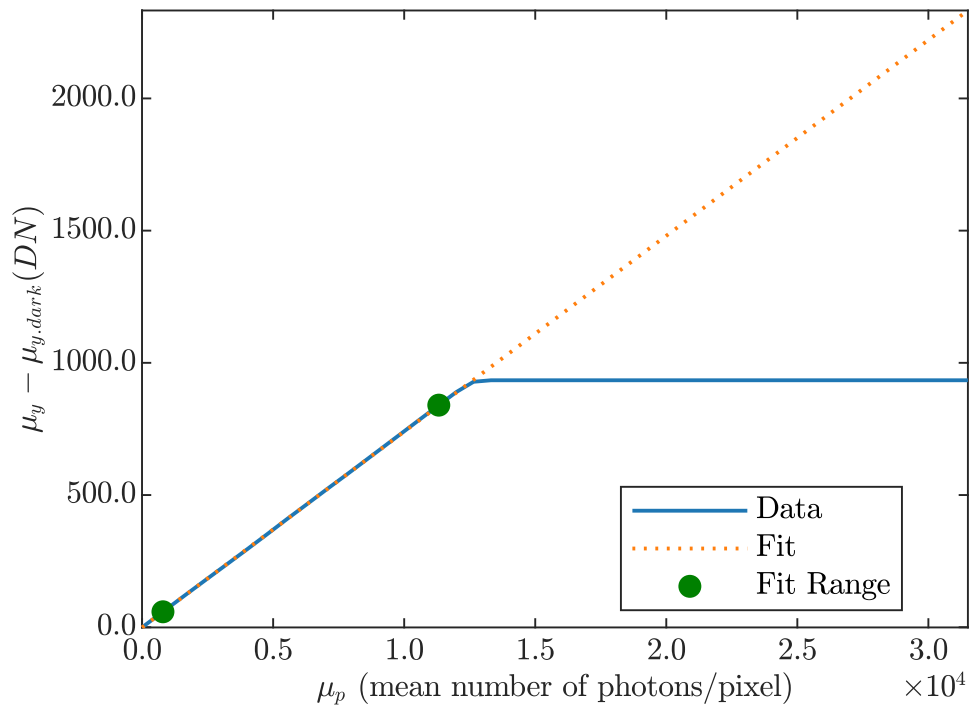
Stability check



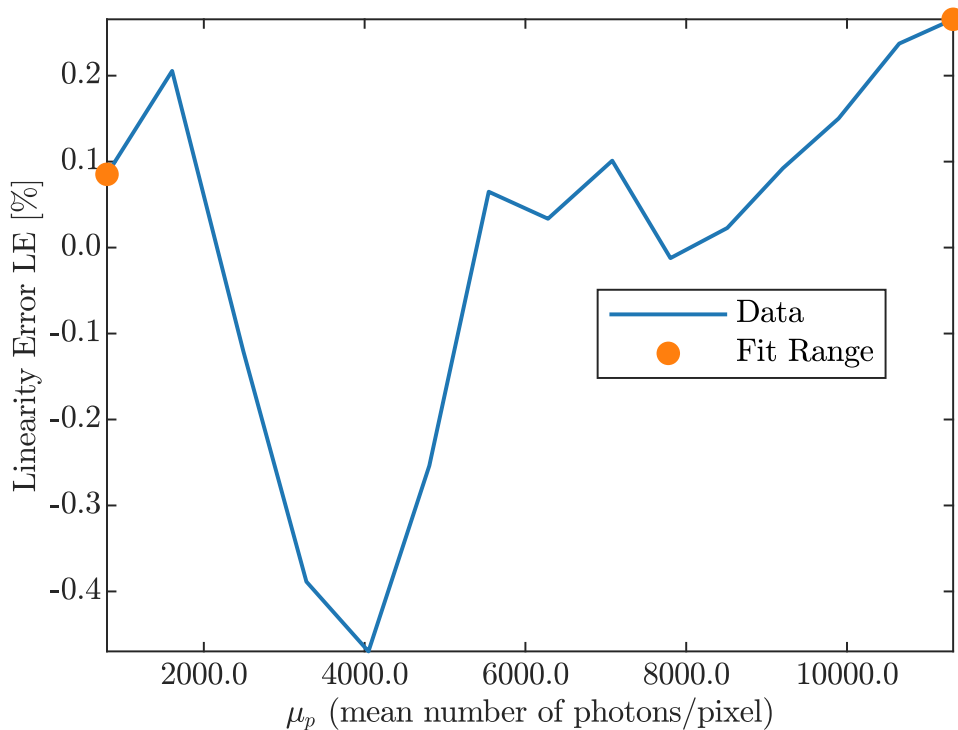
Sensitivity



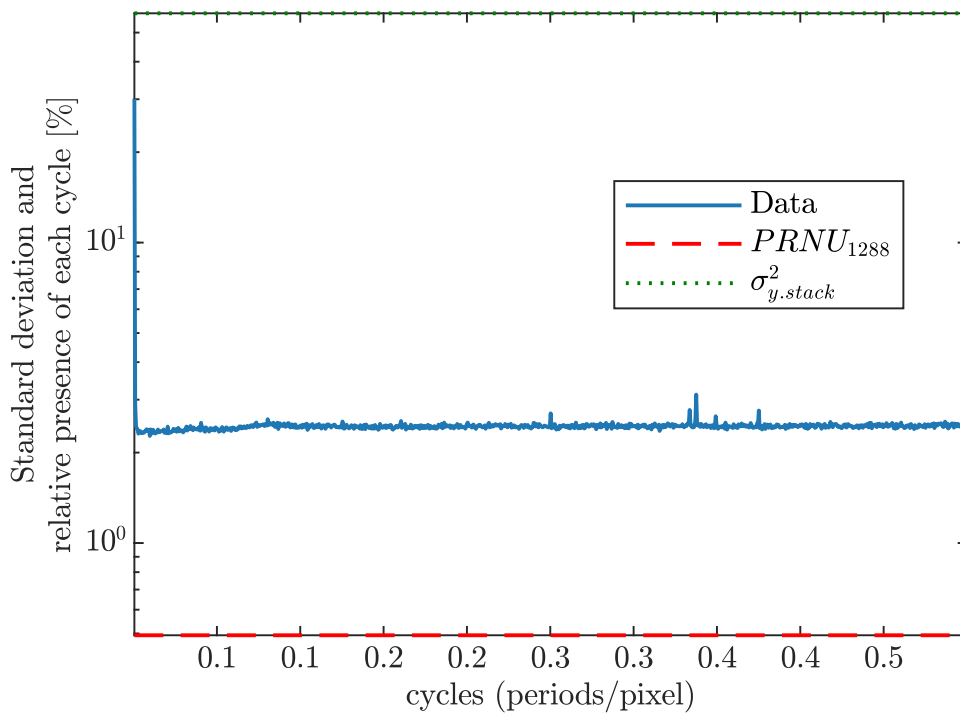
Linearity



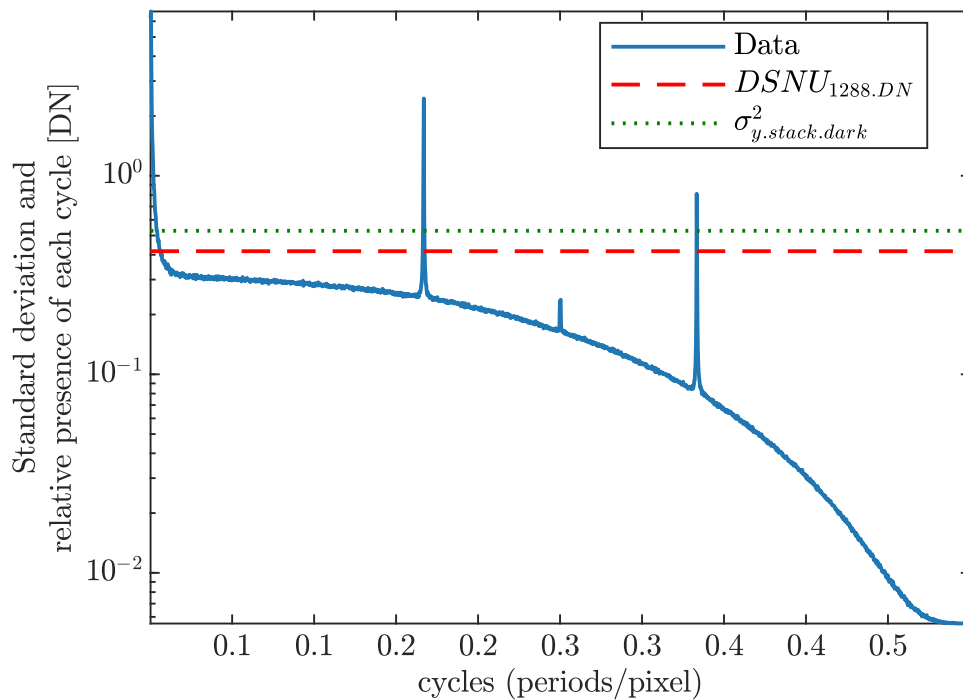
### Deviation Linearity



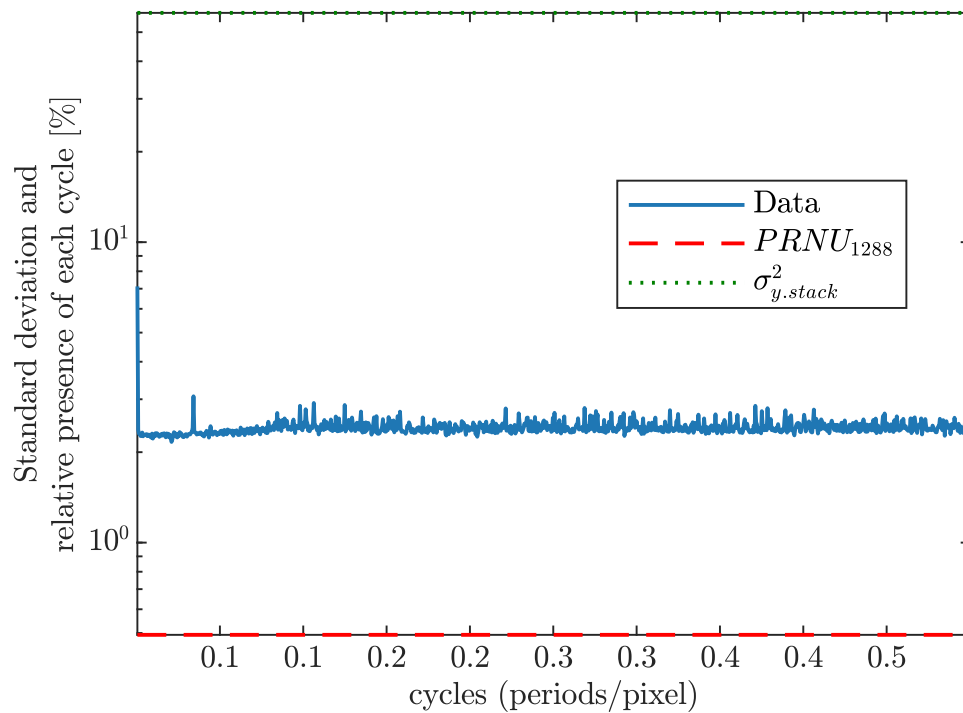
### Horizontal Spectrogram PRNU



### Horizontal Spectrogram DSNU

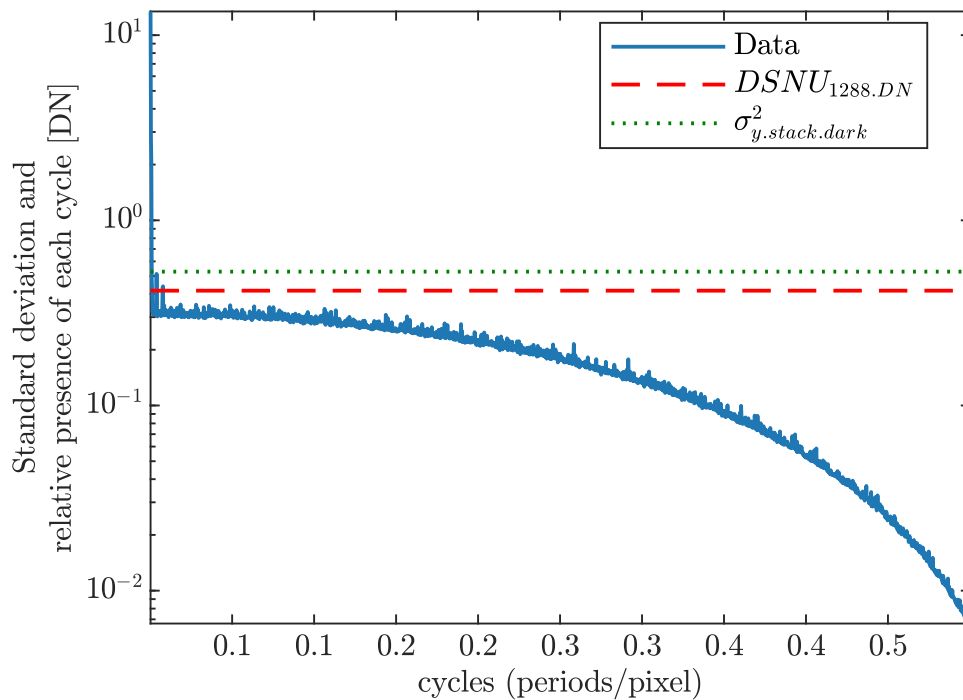


### Vertical Spectrogram PRNU

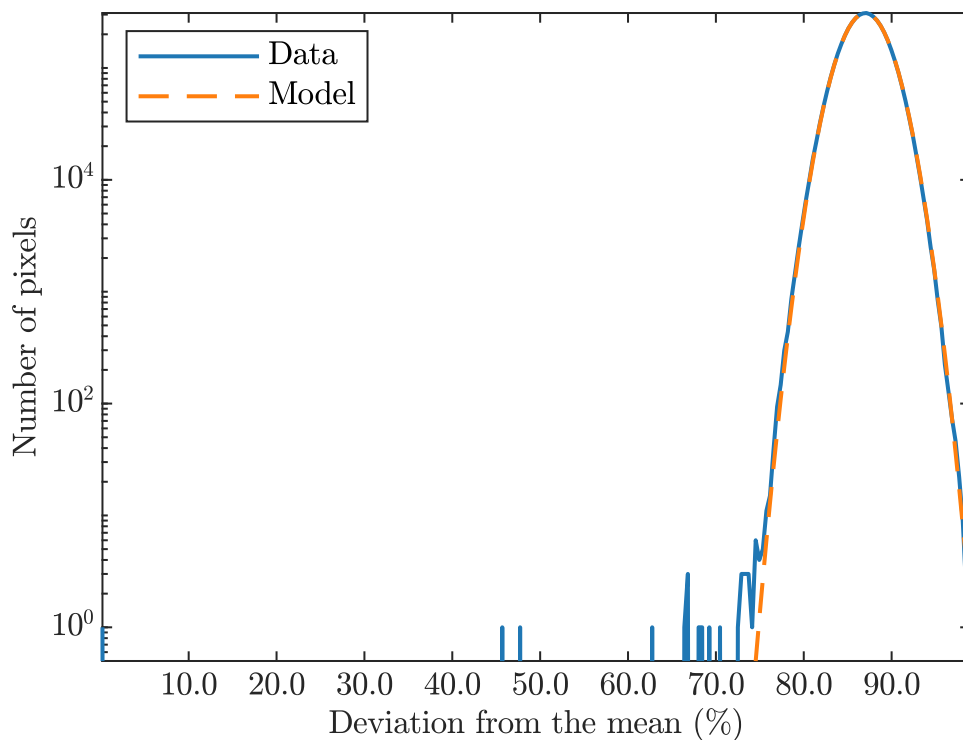




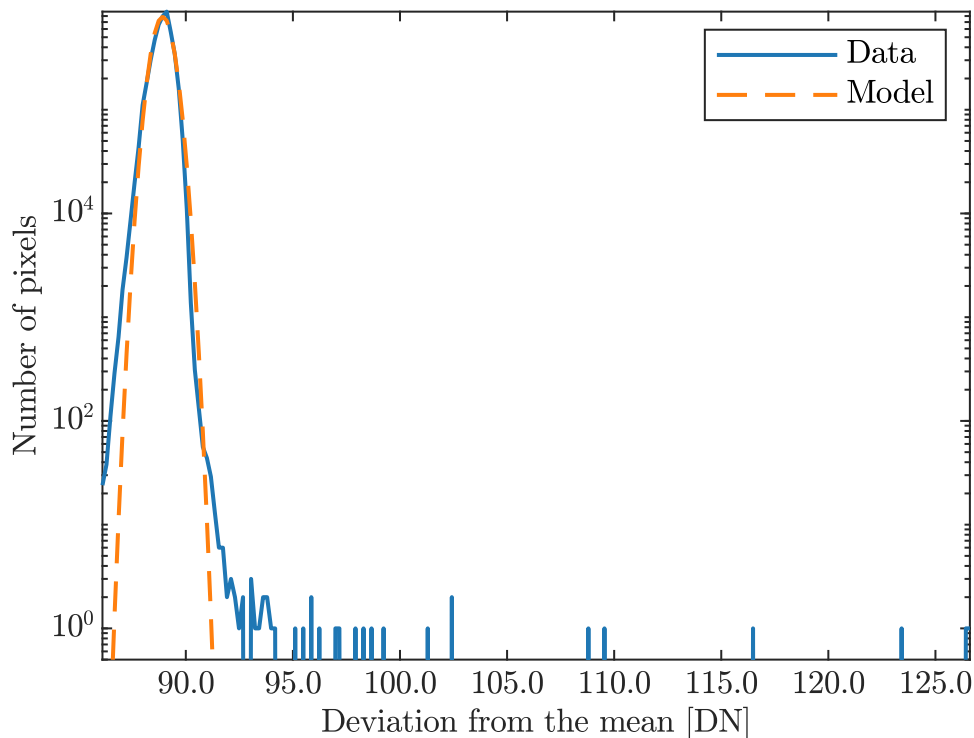
### Vertical Spectrogram DSNU



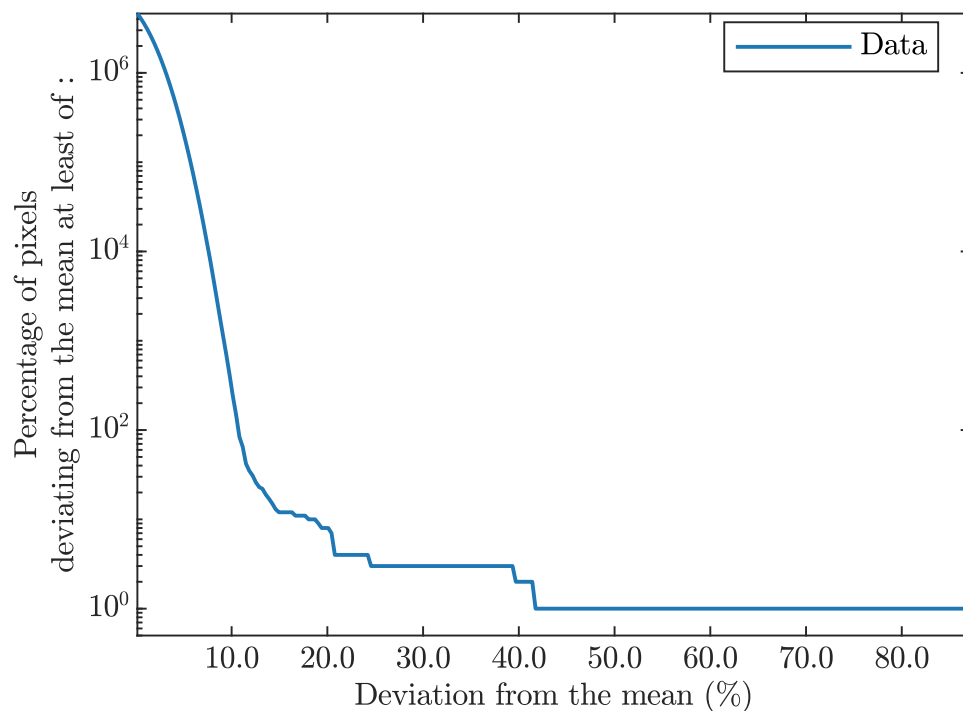
### Logarithmic Histogram PRNU



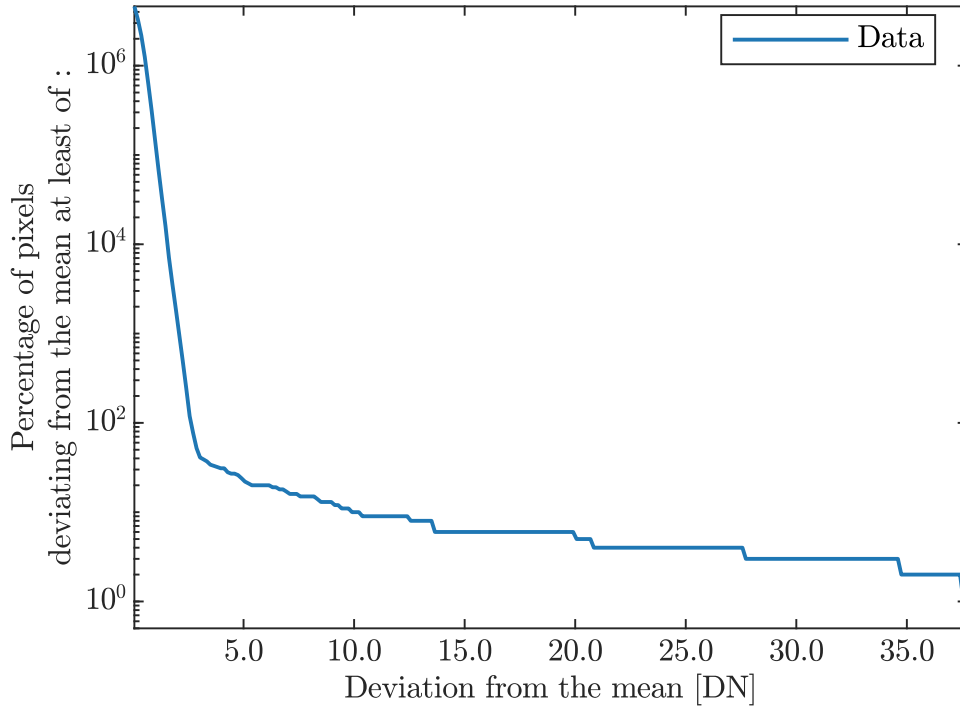
### Logarithmic Histogram DSNU



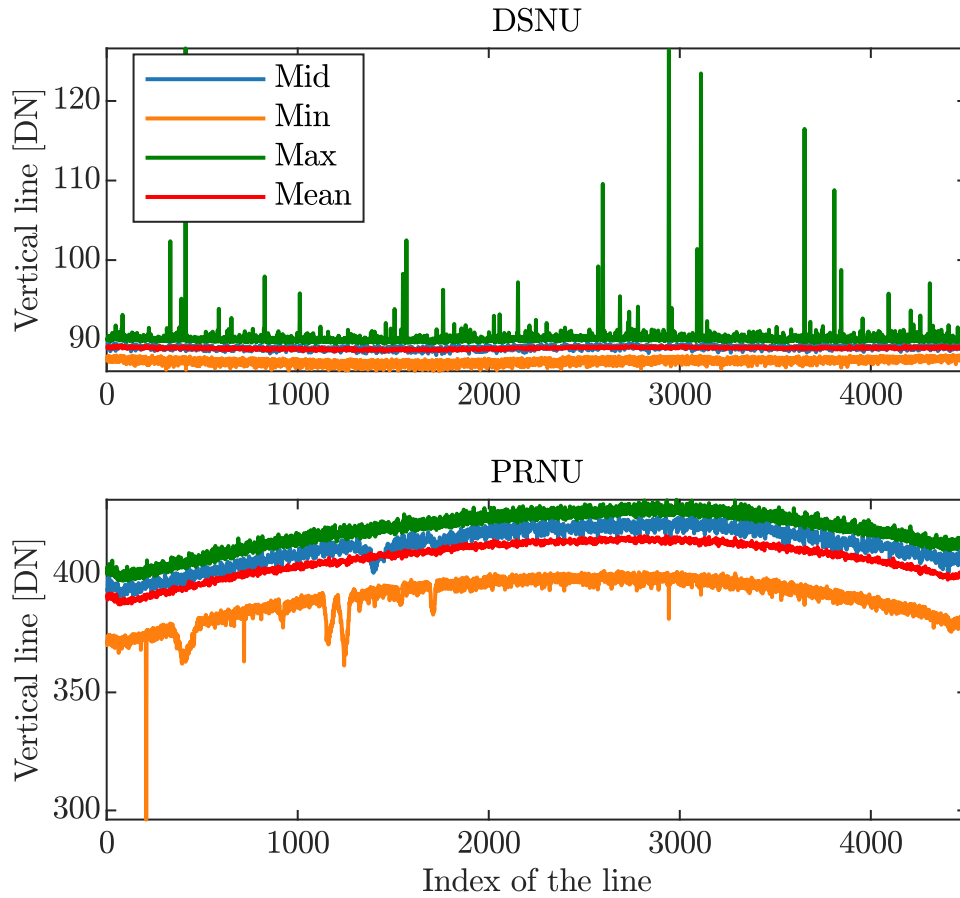
### Accumulated Log Histogram PRNU



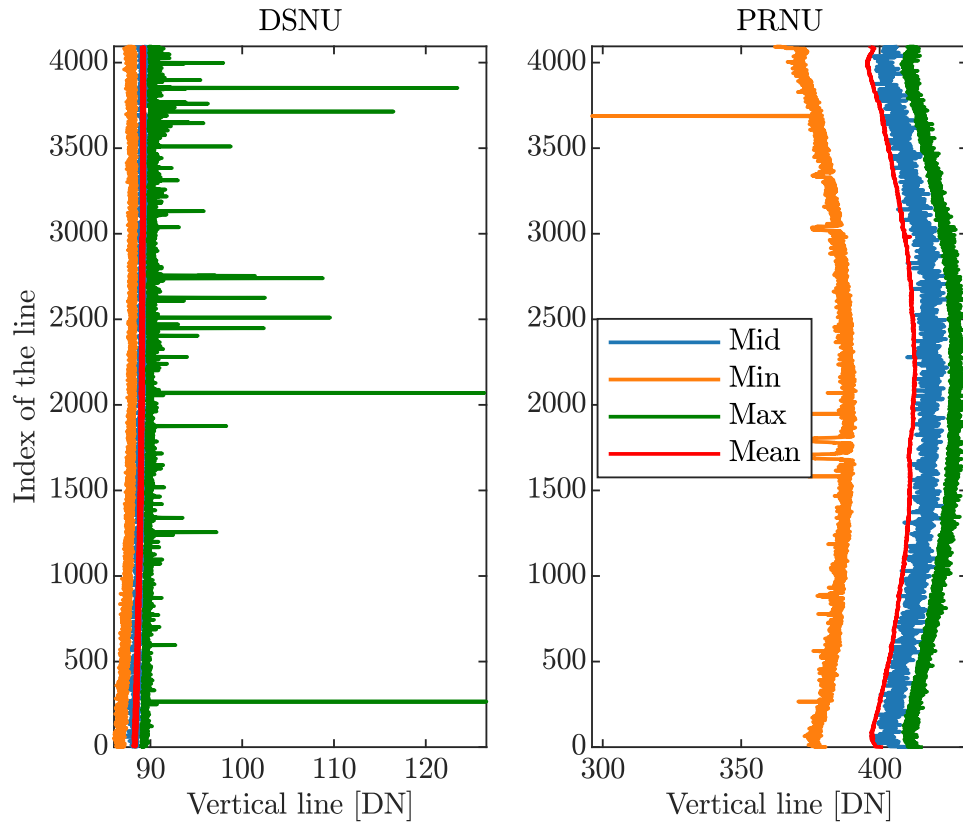
Accumulated Log Histogram DSNU



Horizontal Profile

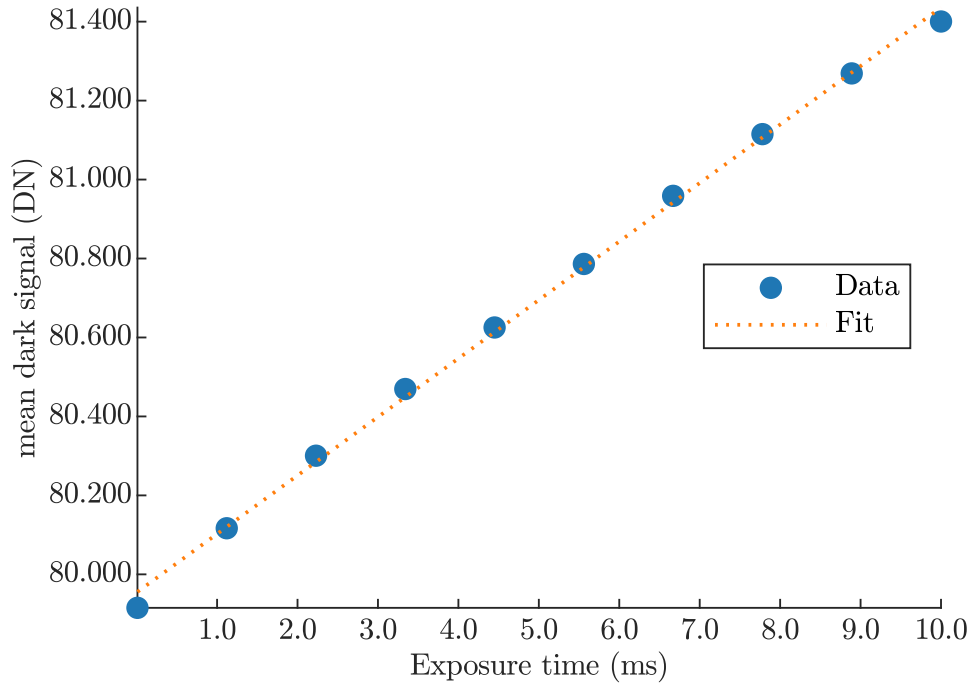


### Vertical Profile

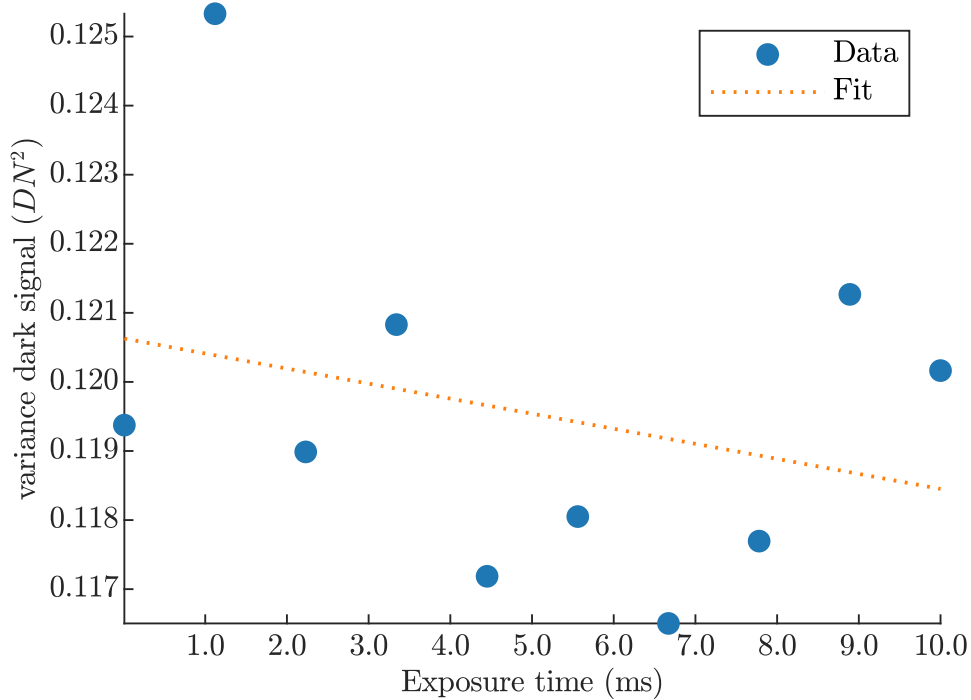


Dark Current

Dark Current from Mean



Dark Current from Variance



International Distributors



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