

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).

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 μ s
Pixel size	2.5 μ m x 2.5 μ 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 Distributor



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Geisenhausenerstr. 18
81379 Munich, Germany
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www.skyblue.de

Summary Sheet for Operation Point 1 at a Wavelength of 520 nm

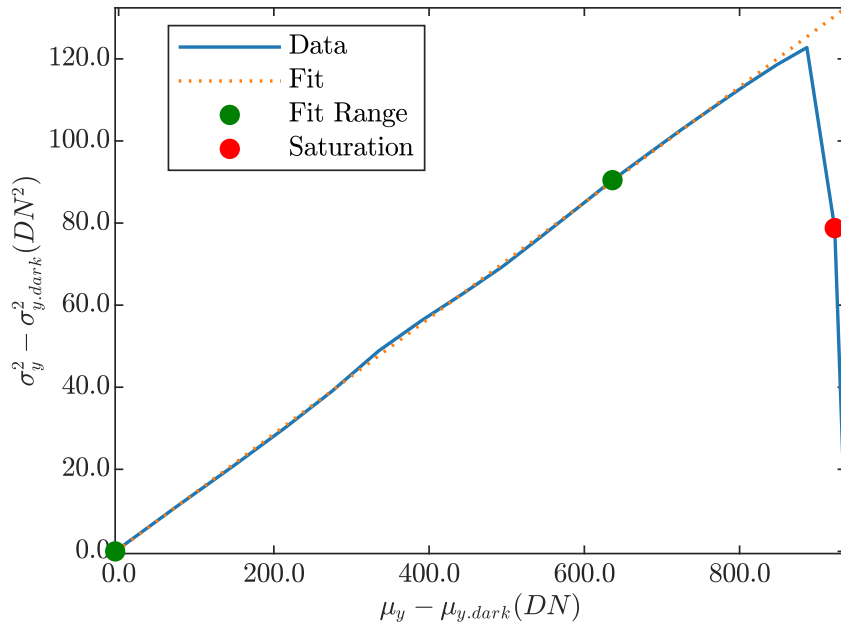
Camera setting

Gain	1.75
Black level	-500

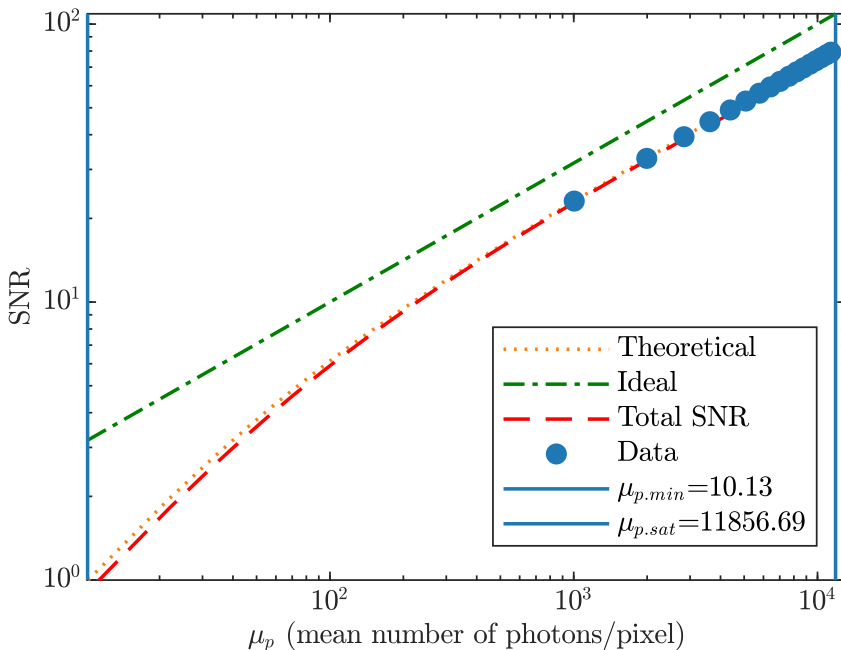
Operation point parameters

Environmental temperature	22.12
Camera body temperature	41.56
Sensor temperature	47
Processor temperature	48

Photon Transfer



Signal-to-Noise Ratio



Performance

Quantum efficiency

η	55.536	%
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System gain

K	0.14093	DN/e ⁻
1/K	7.0959	e ⁻ /DN

Temporal dark noise

σ_d	4.7016	e ⁻
$\sigma_{y,dark}$	0.72274	DN

Signal-to-noise ratio

SNR _{max}	81.1464	
	38.1854	dB
	6.3425	bit
1/SNR _{max}	1.2323	%

Absolute sensitivity threshold

$\mu_{e,min}$	5.6285	e ⁻
$\mu_{e,min,area}$	0.90056	e ⁻ /μm ²

Saturation capacity

$\mu_{e,sat}$	6584.732	e ⁻
$\mu_{e,sat,area}$	1053.5571	e ⁻ /μm ²

Dynamic range

DR	1169.8915	
	61.3629	dB
	10.1922	bit

Spatial nonuniformities

DSNU ₁₂₈₈	2.5644	e ⁻
DSNU _{1288,col}	1.2474	e ⁻
DSNU _{1288,row}	1.5876	e ⁻
DSNU _{1288,pix}	1.581	e ⁻
PRNU ₁₂₈₈	0.50353	%
PRNU _{1288,col}	0.19404	%
PRNU _{1288,row}	0.022092	%
PRNU _{1288,pix}	0.46411	%

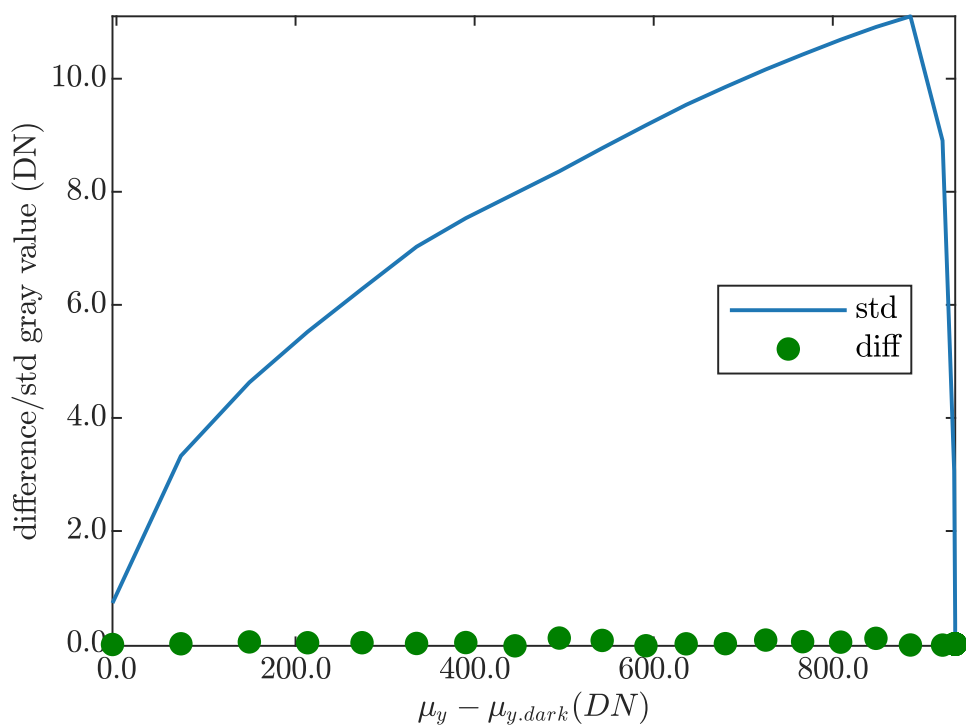
Linearity error

LE	0.0027794	%
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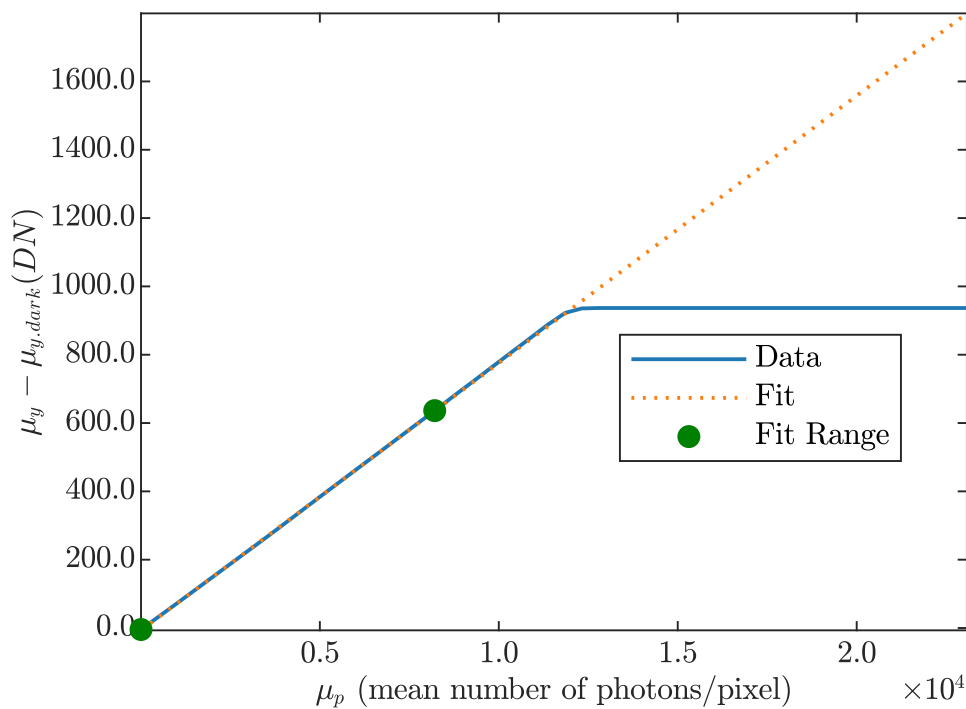
Dark current

$\mu_{l,mean}$	1054.5596	e ⁻ /s
$\mu_{l,var}$	NaN	e ⁻ /s

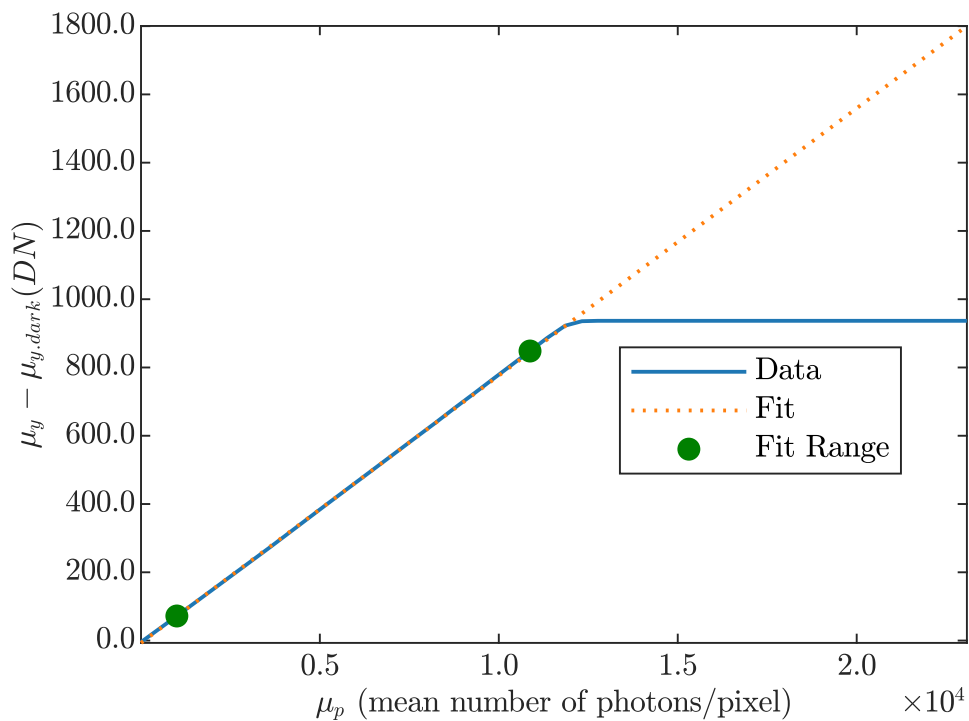
Stability check



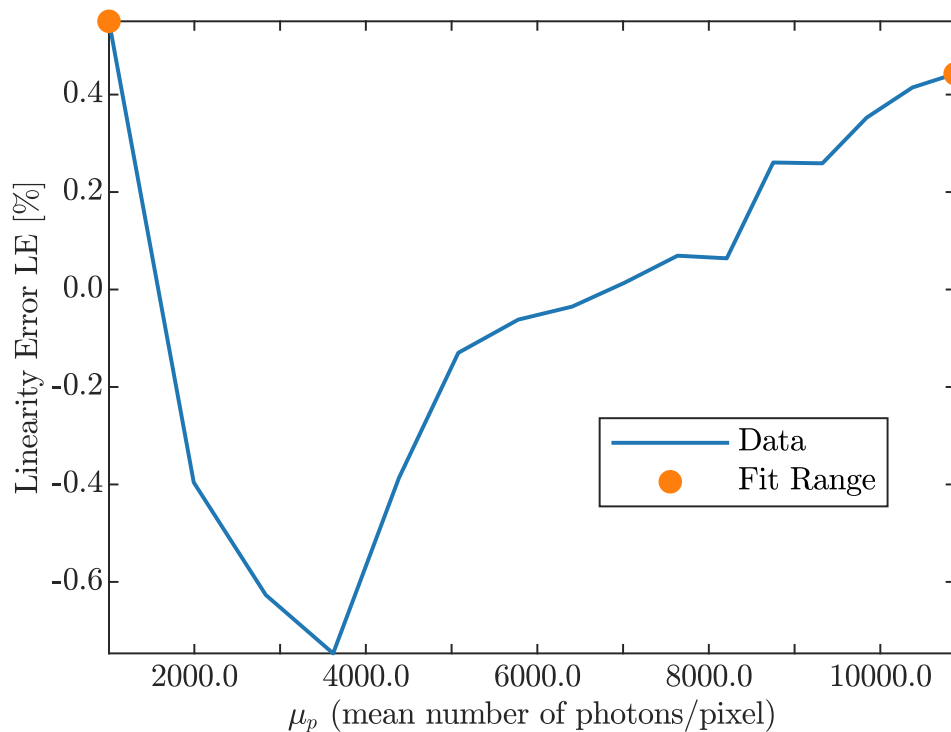
Sensitivity



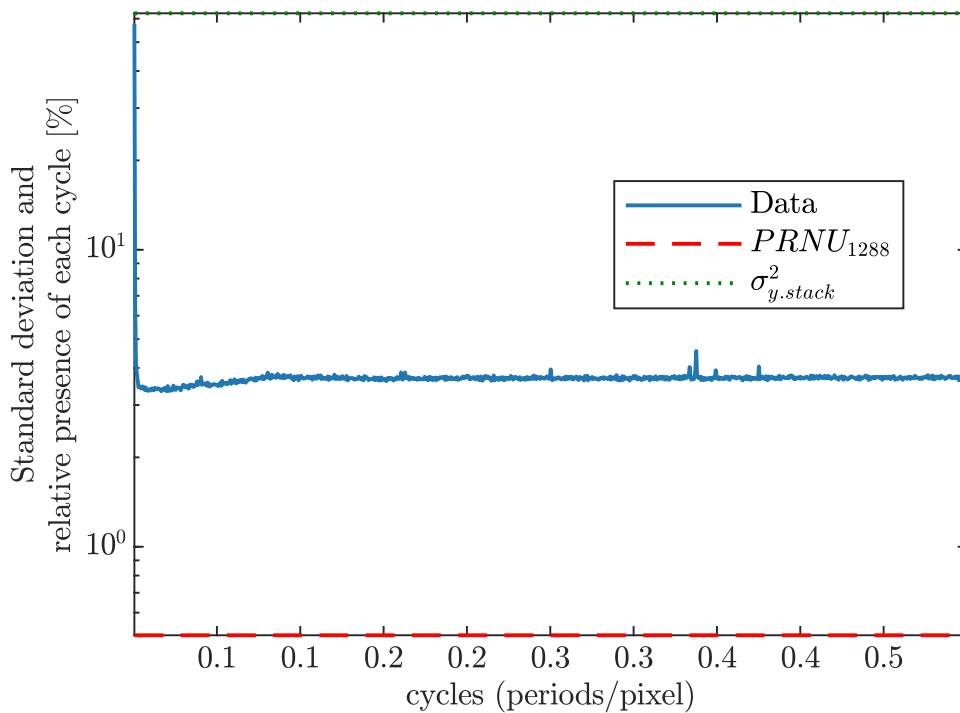
Linearity



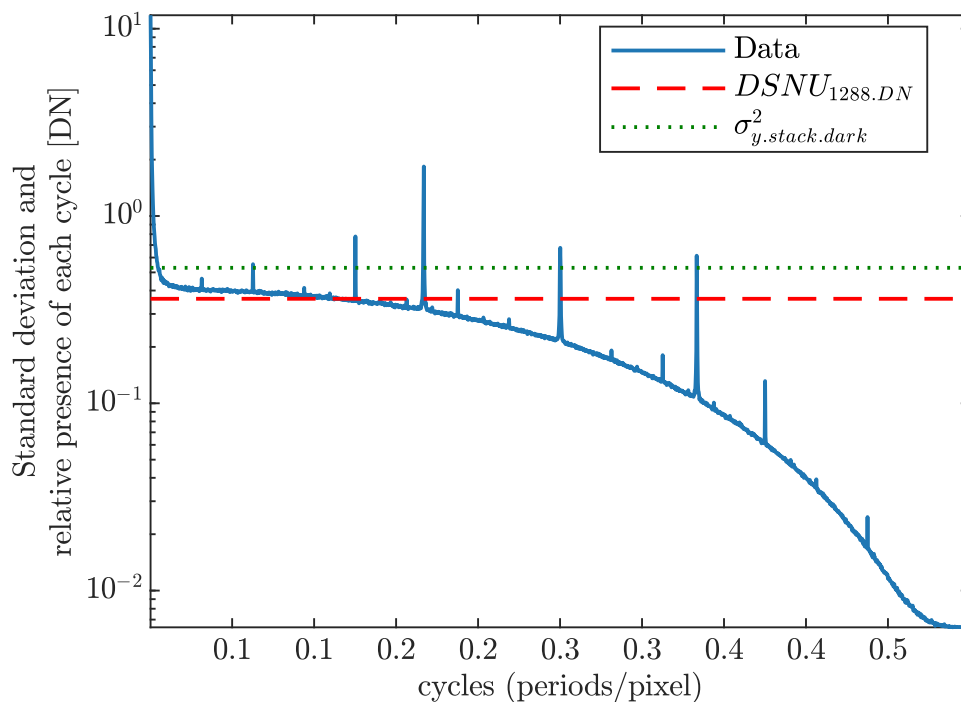
Deviation Linearity



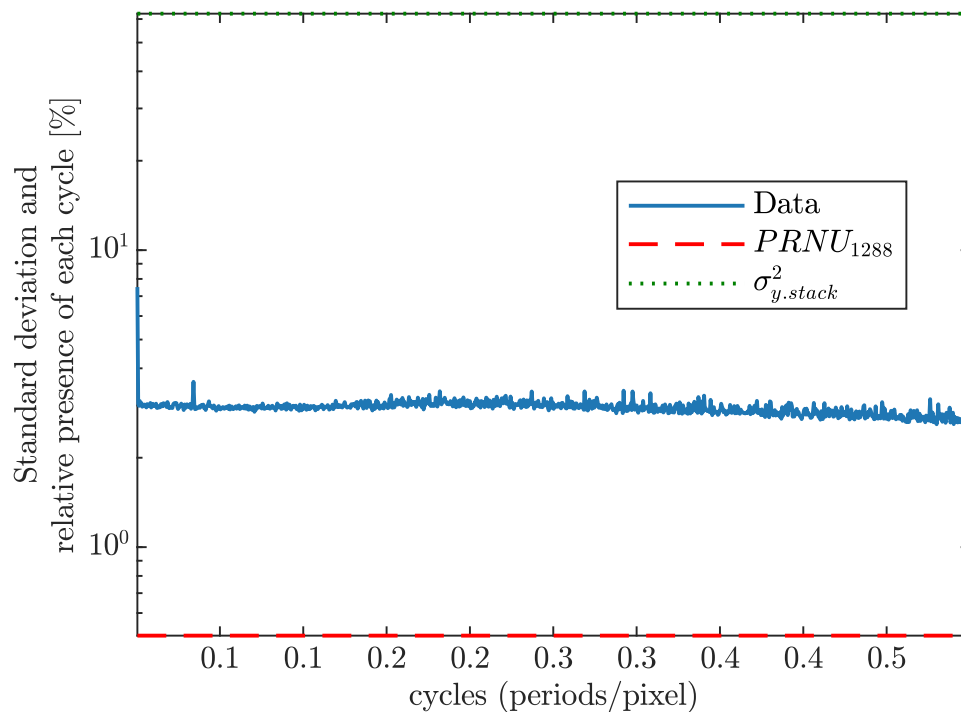
Horizontal Spectrogram PRNU



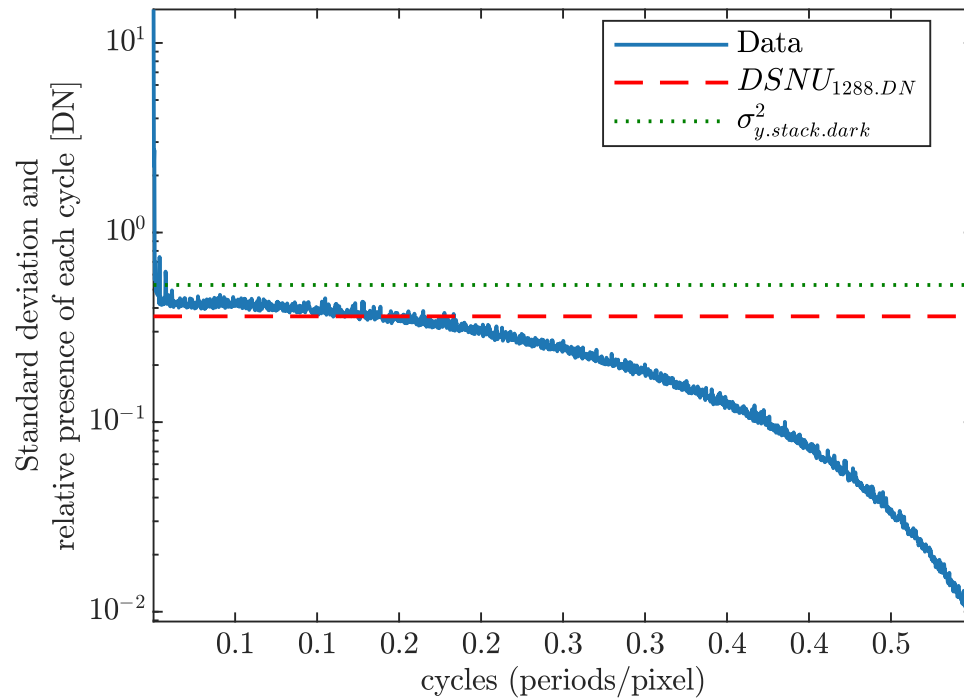
Horizontal Spectrogram DSNU



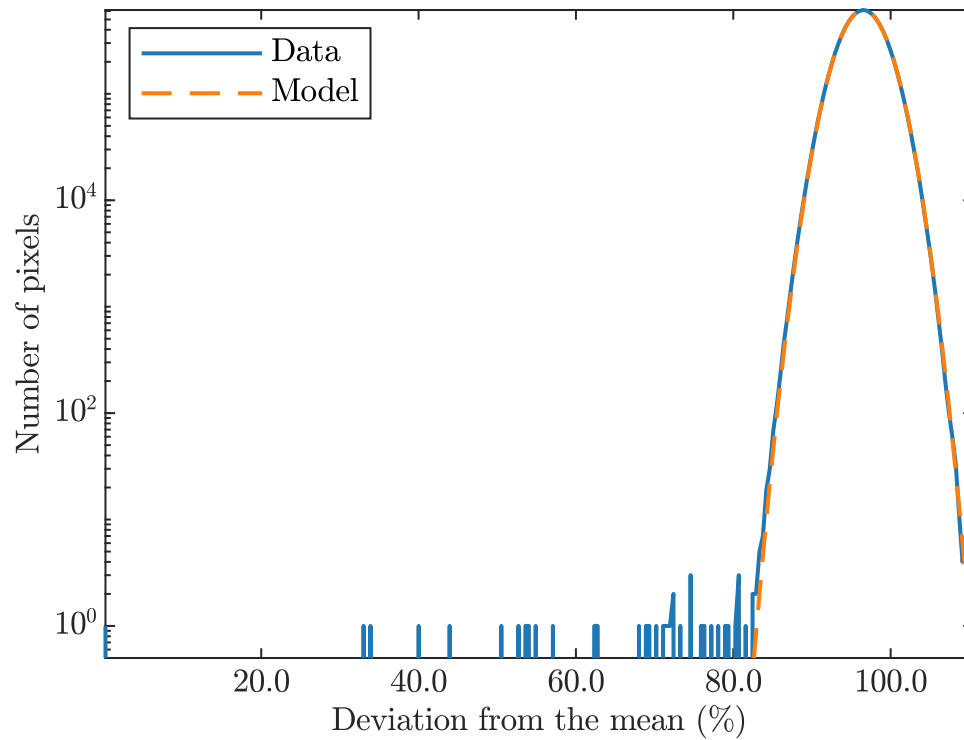
Vertical Spectrogram PRNU



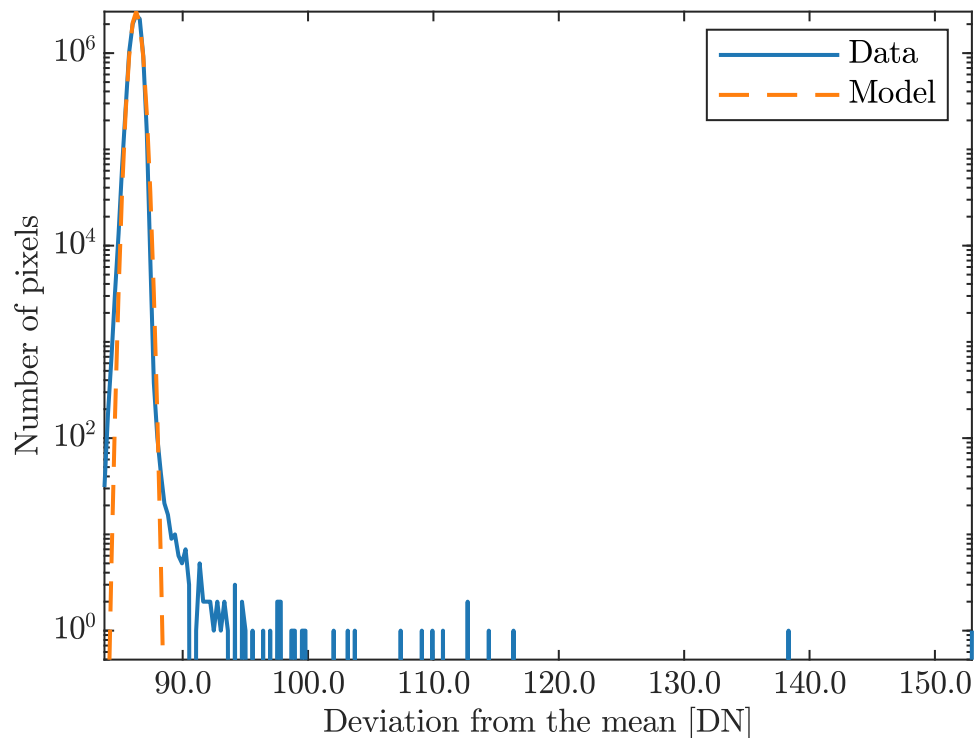
Vertical Spectrogram DSNU



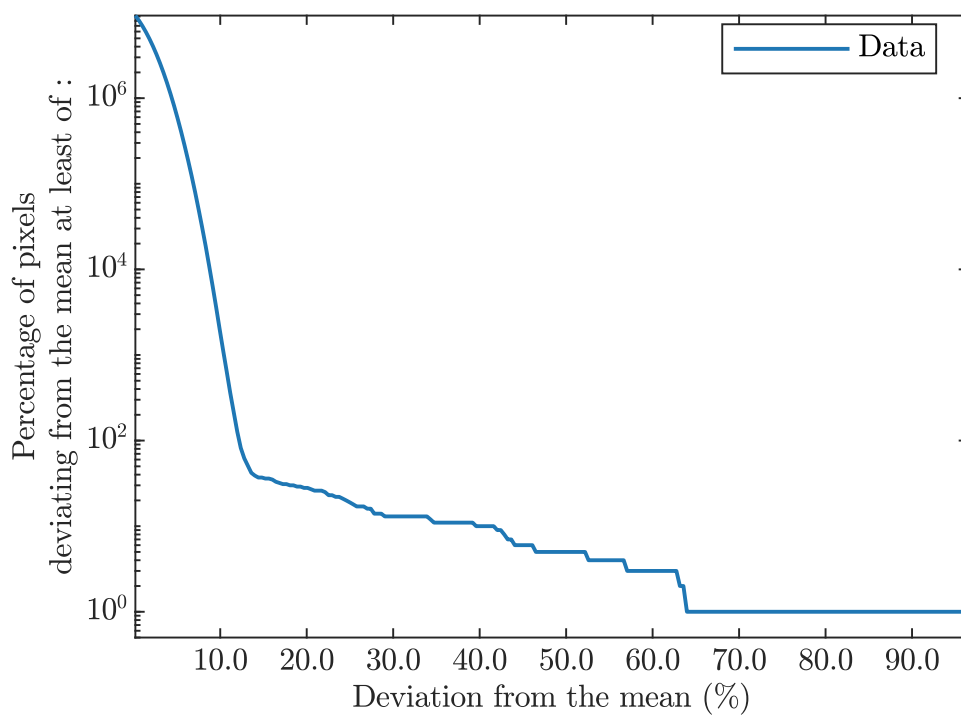
Logarithmic Histogram PRNU



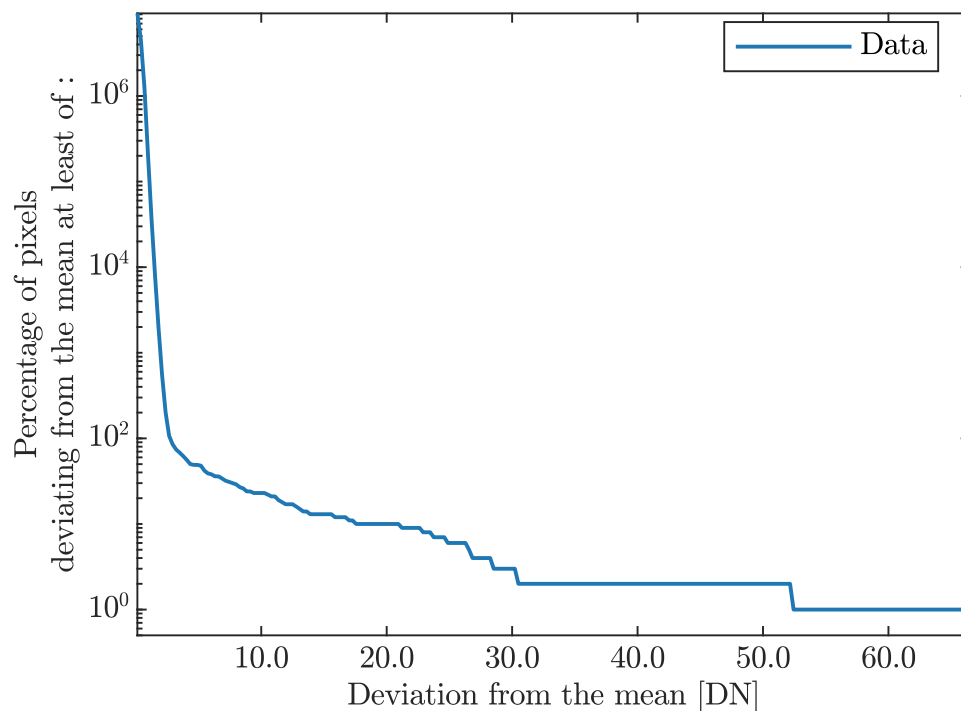
Logarithmic Histogram DSNU



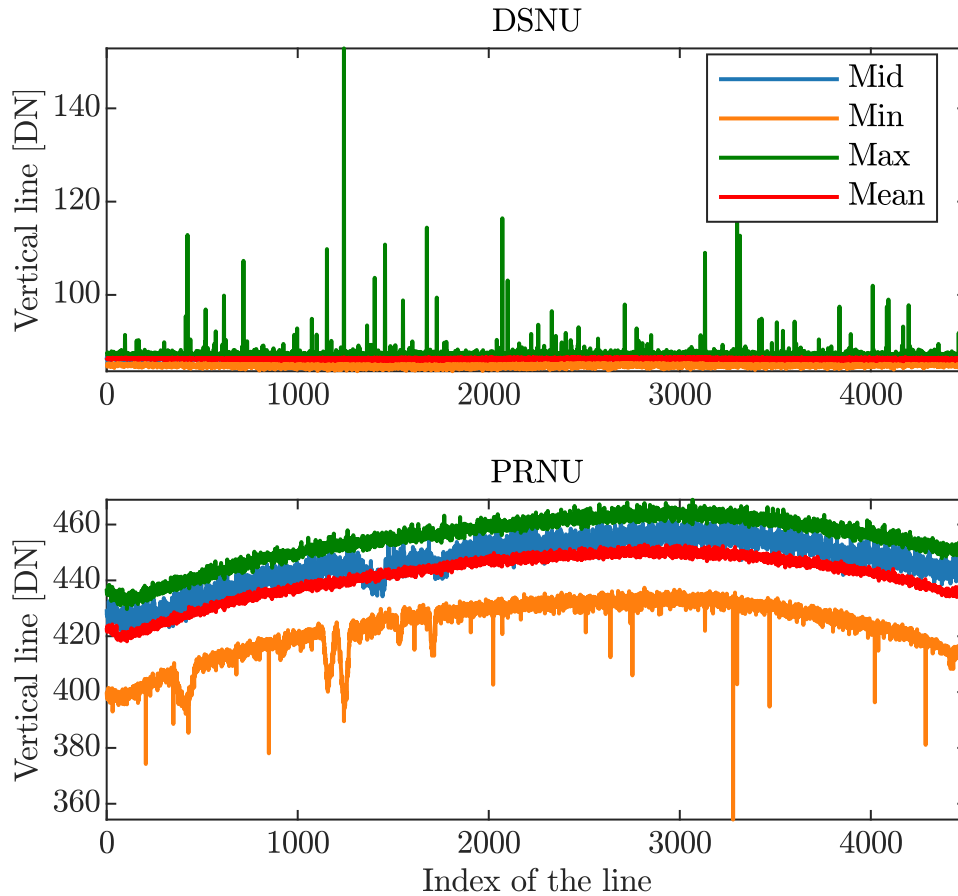
Accumulated Log Histogram PRNU



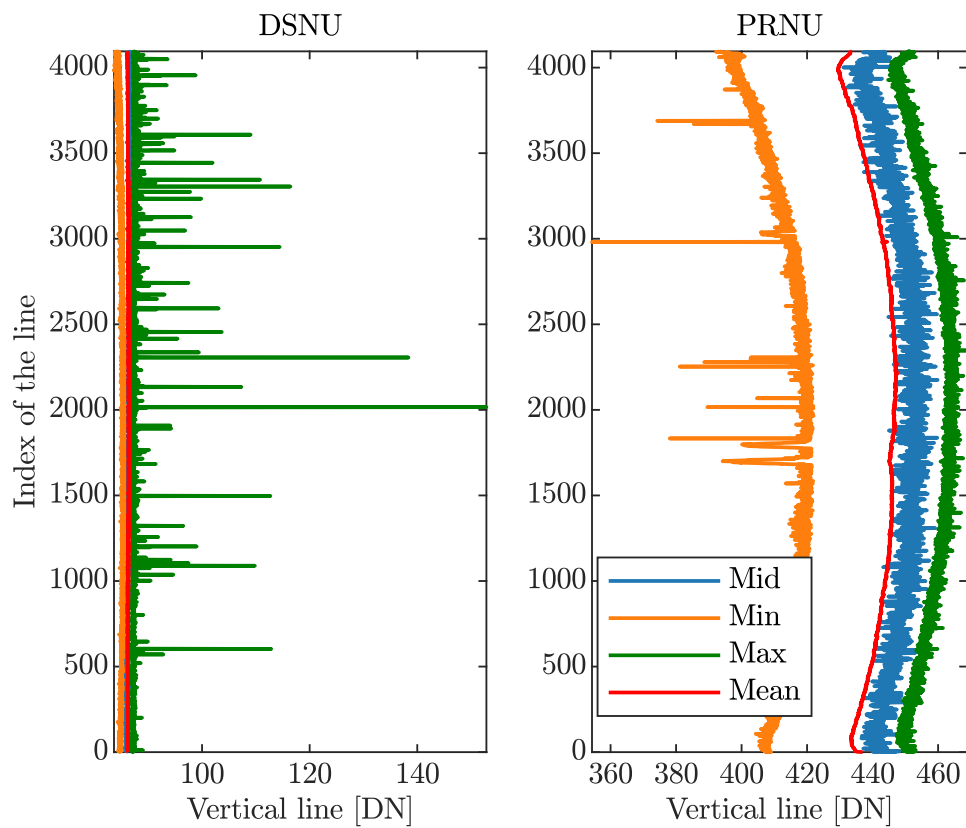
Accumulated Log Histogram DSNU



Horizontal Profile



Vertical Profile



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

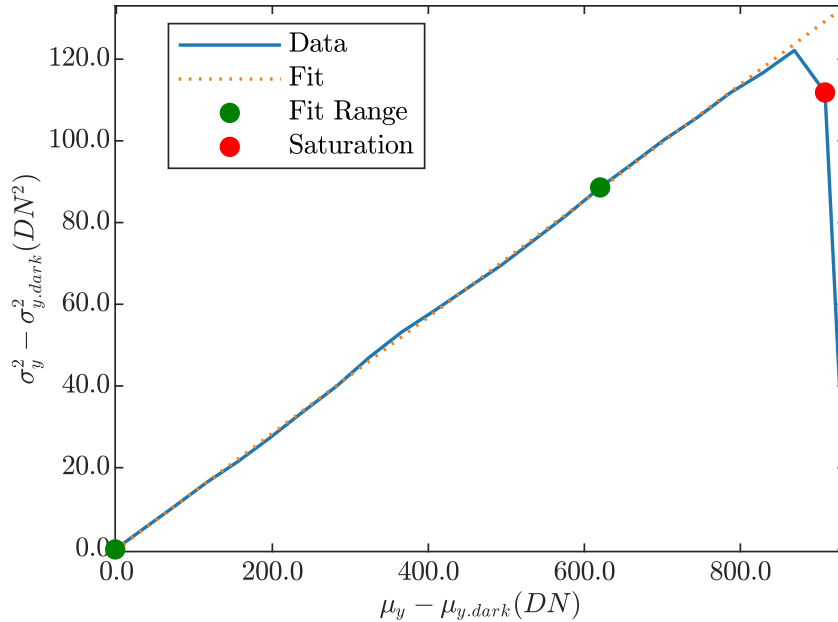
Camera setting

Gain	1.75
Black level	-500

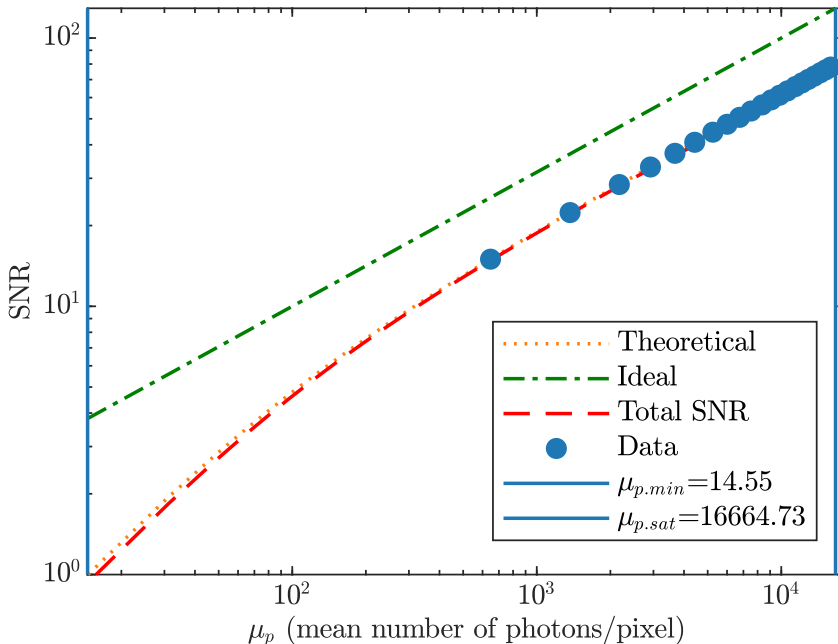
Operation point parameters

Environmental temperature	21.31
Camera body temperature	41.98
Sensor temperature	50
Processor temperature	49

Photon Transfer



Signal-to-Noise Ratio



Performance

Quantum efficiency

η	38.3183	%
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System gain

K	0.14236	DN/e ⁻
1/K	7.0246	e ⁻ /DN

Temporal dark noise

σ_d	4.6544	e ⁻
$\sigma_{y,dark}$	0.72274	DN

Signal-to-noise ratio

SNR _{max}	79.9102	
	38.052	dB
	6.3203	bit
1/SNR _{max}	1.2514	%

Absolute sensitivity threshold

$\mu_{e,min}$	5.5769	e ⁻
$\mu_{e,min,area}$	0.89231	e ⁻ /μm ²

Saturation capacity

$\mu_{e,sat}$	6385.6412	e ⁻
$\mu_{e,sat,area}$	1021.7026	e ⁻ /μm ²

Dynamic range

DR	1145.0106	
	61.1762	dB
	10.1611	bit

Spatial nonuniformities

DSNU ₁₂₈₈	2.1295	e ⁻
DSNU _{1288,col}	0.93865	e ⁻
DSNU _{1288,row}	0.85223	e ⁻
DSNU _{1288,pix}	1.7109	e ⁻
PRNU ₁₂₈₈	0.51864	%
PRNU _{1288,col}	0.16305	%
PRNU _{1288,row}	0.038787	%
PRNU _{1288,pix}	0.49081	%

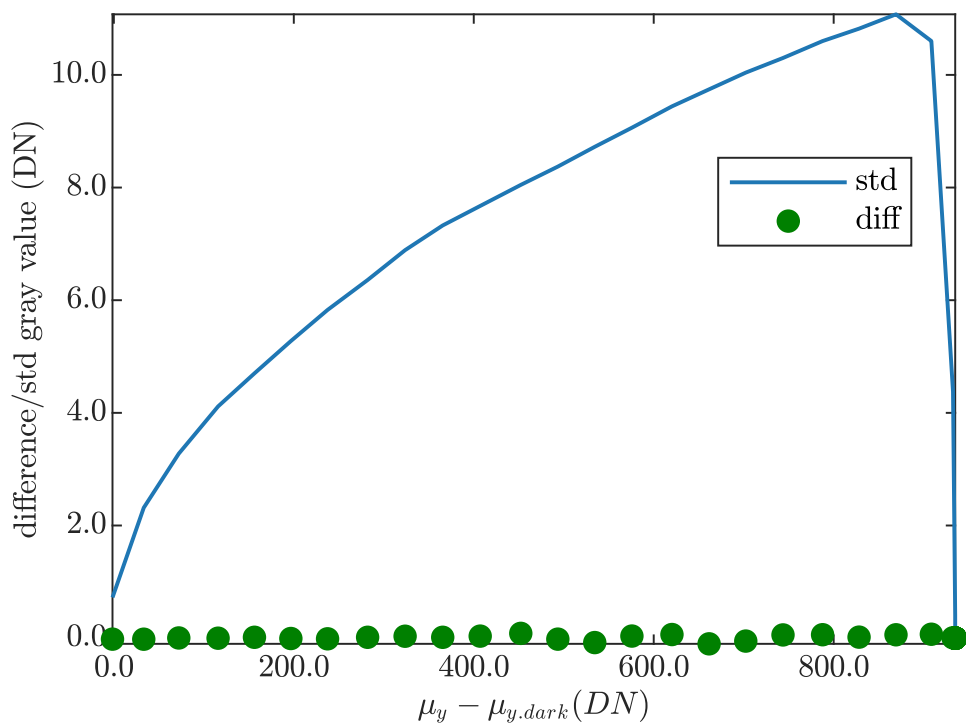
Linearity error

LE	0.0014826	%
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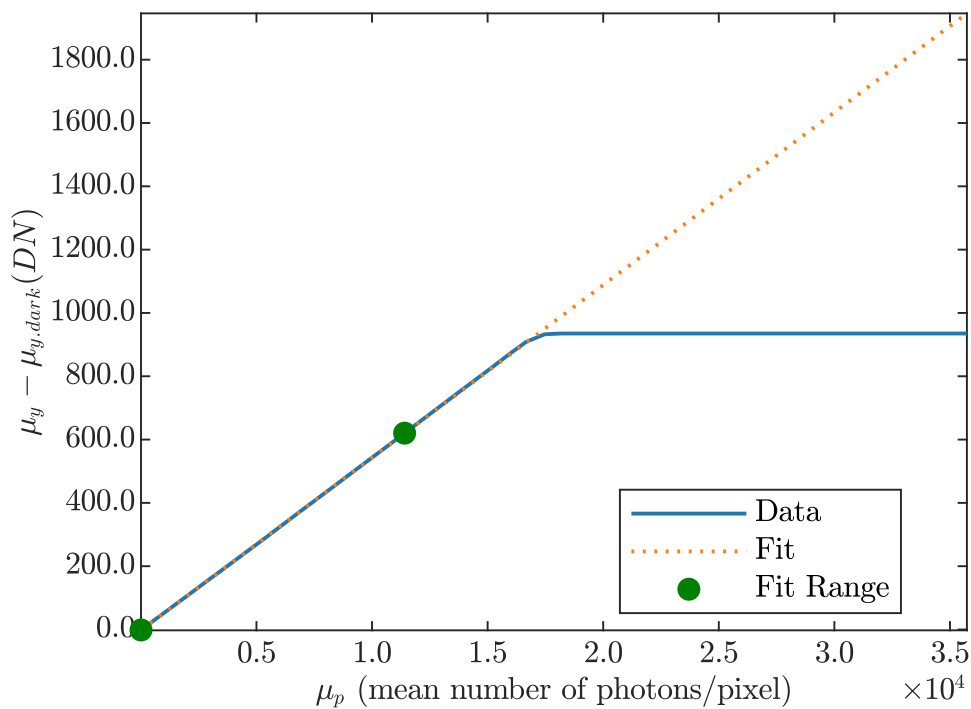
Dark current

$\mu_{l,mean}$	1054.5596	e ⁻ /s
$\mu_{l,var}$	NaN	e ⁻ /s

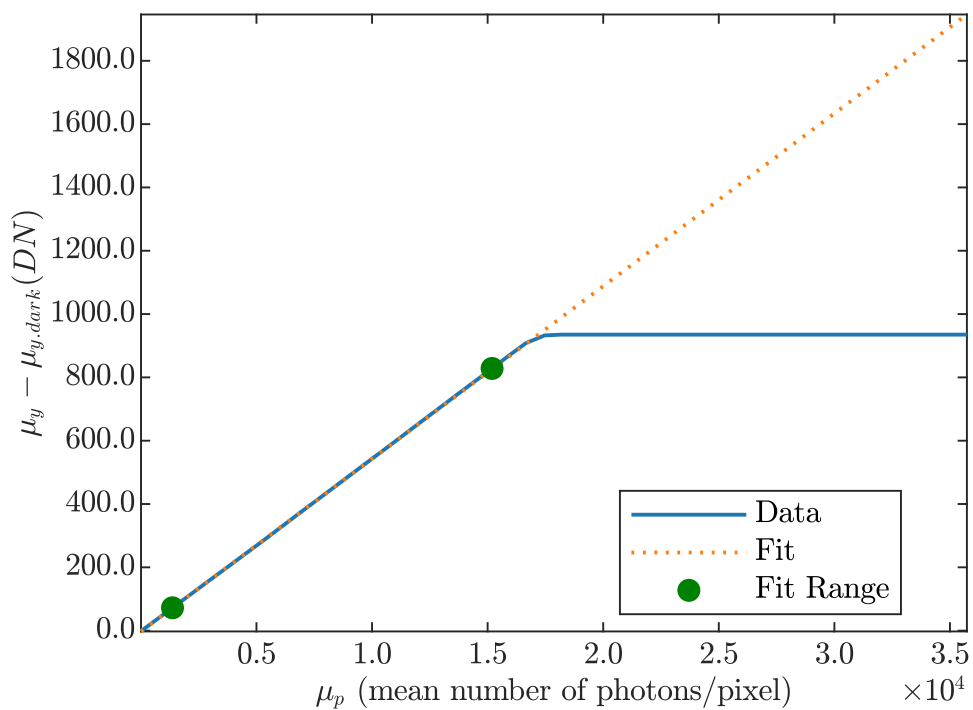
Stability check



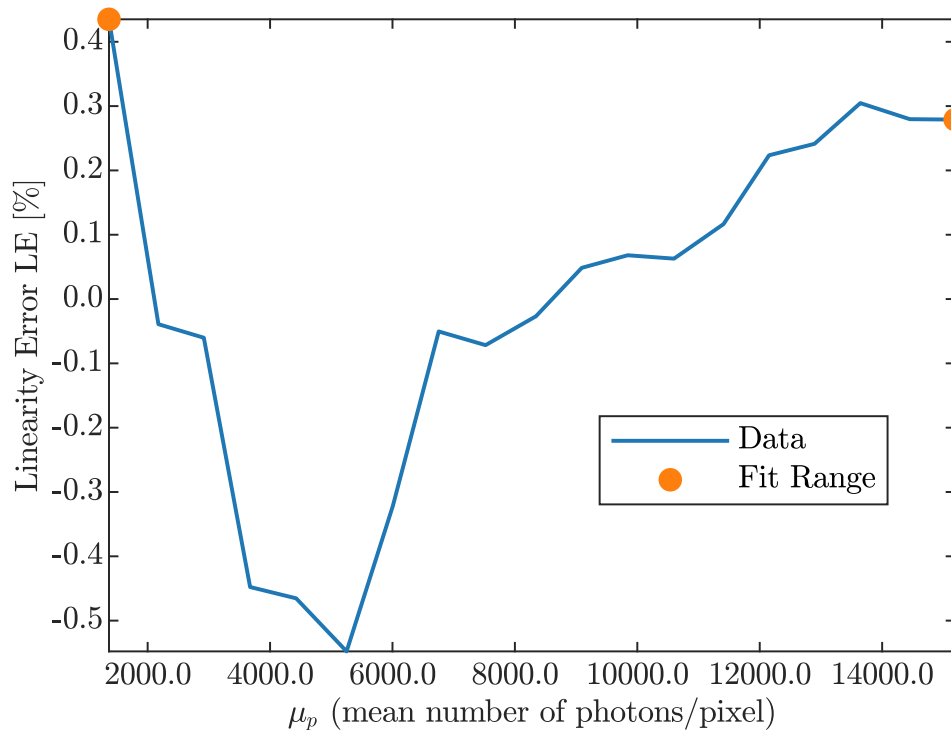
Sensitivity



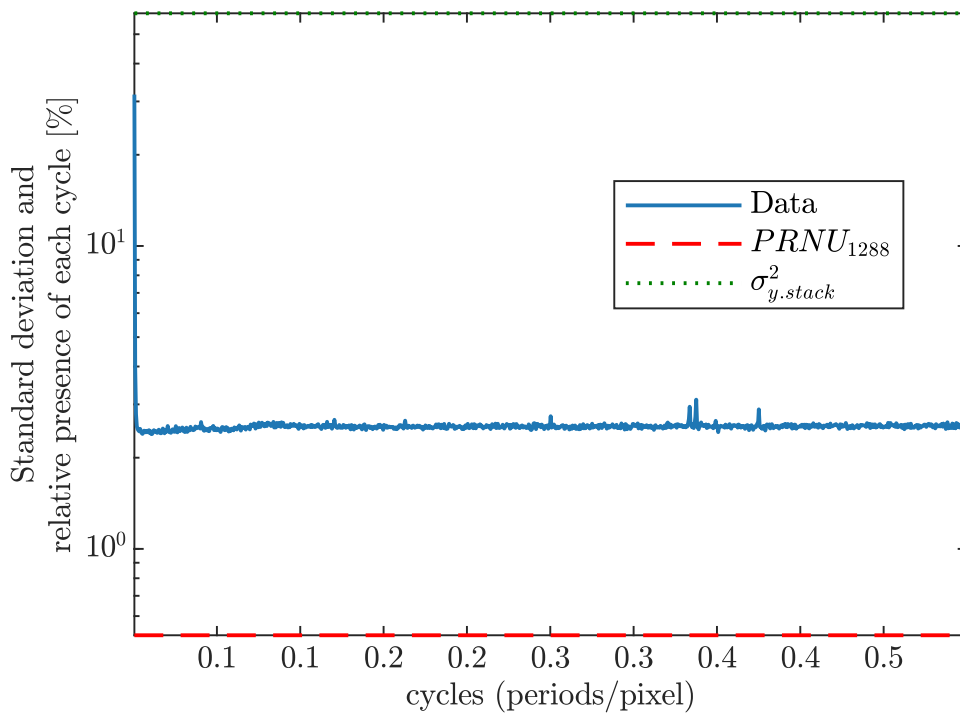
Linearity



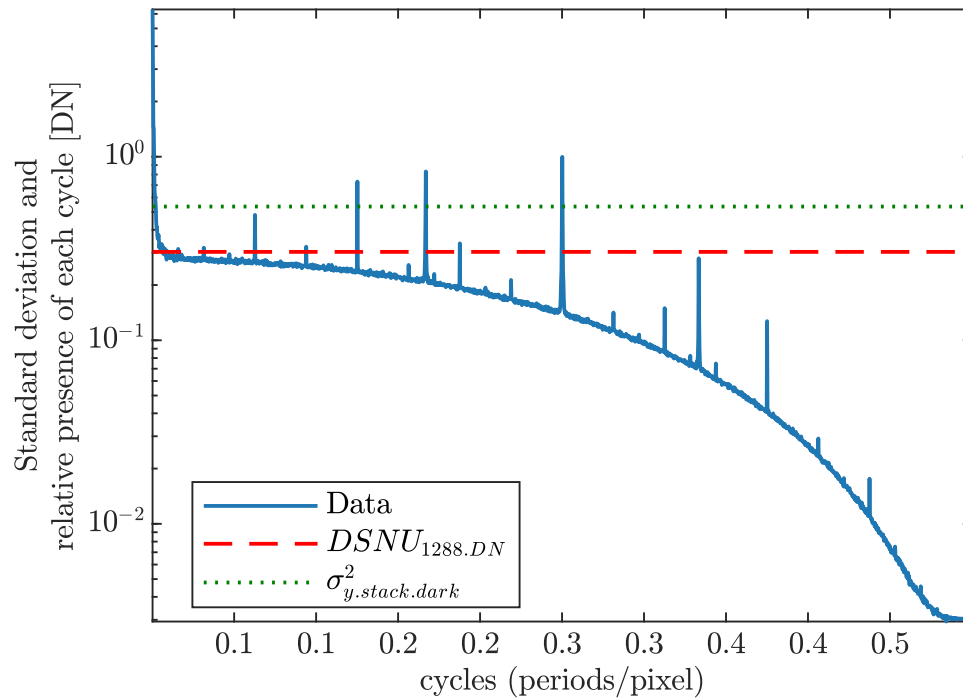
Deviation Linearity



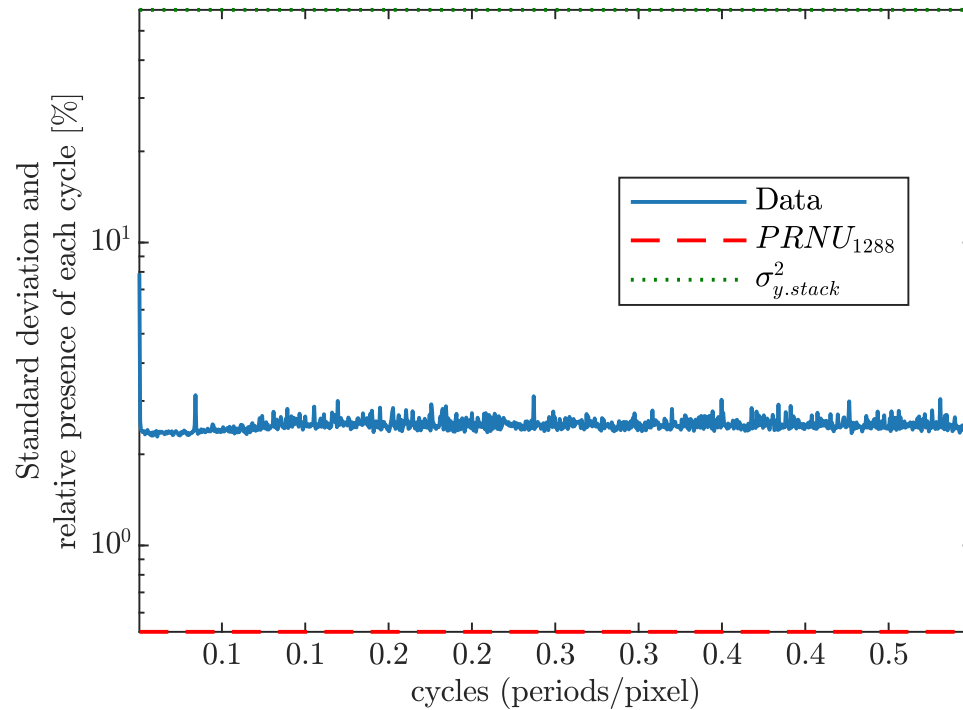
Horizontal Spectrogram PRNU



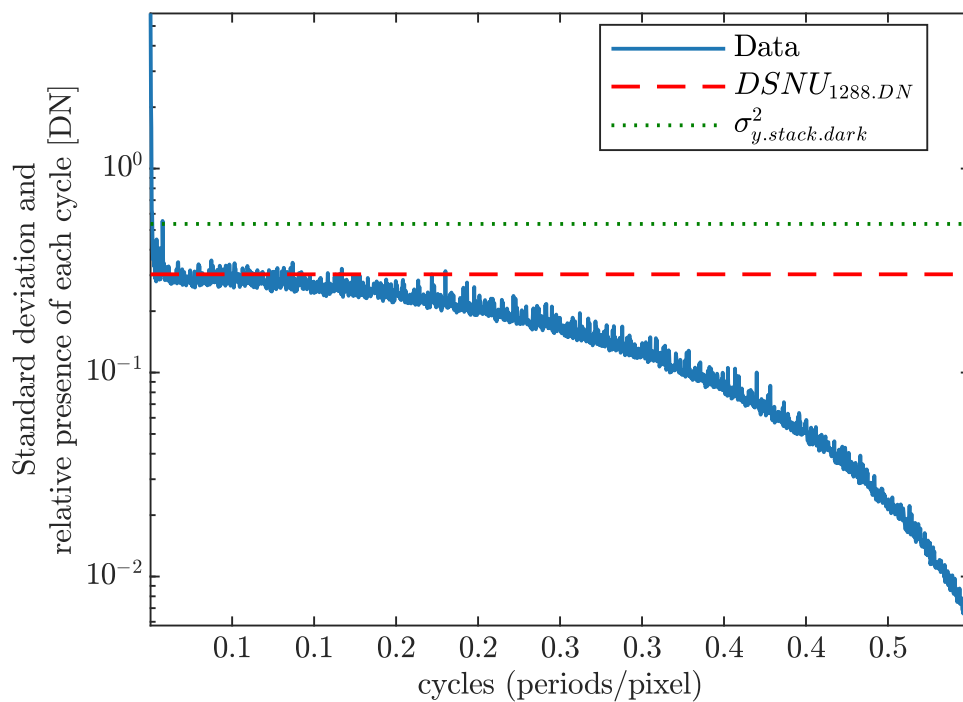
Horizontal Spectrogram DSNU



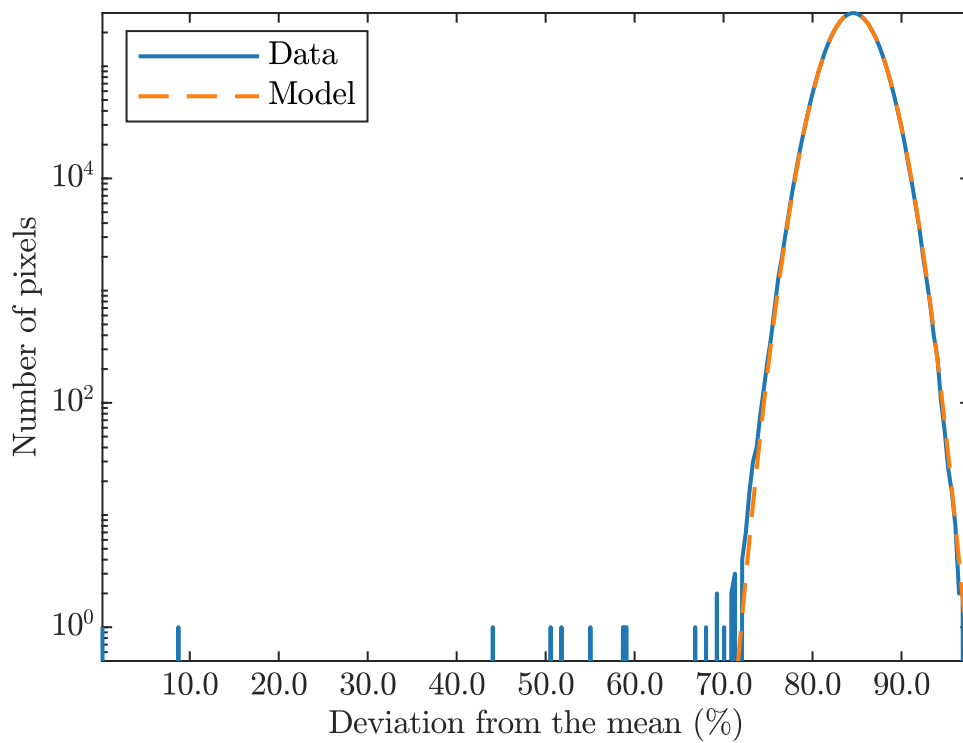
Vertical Spectrogram PRNU



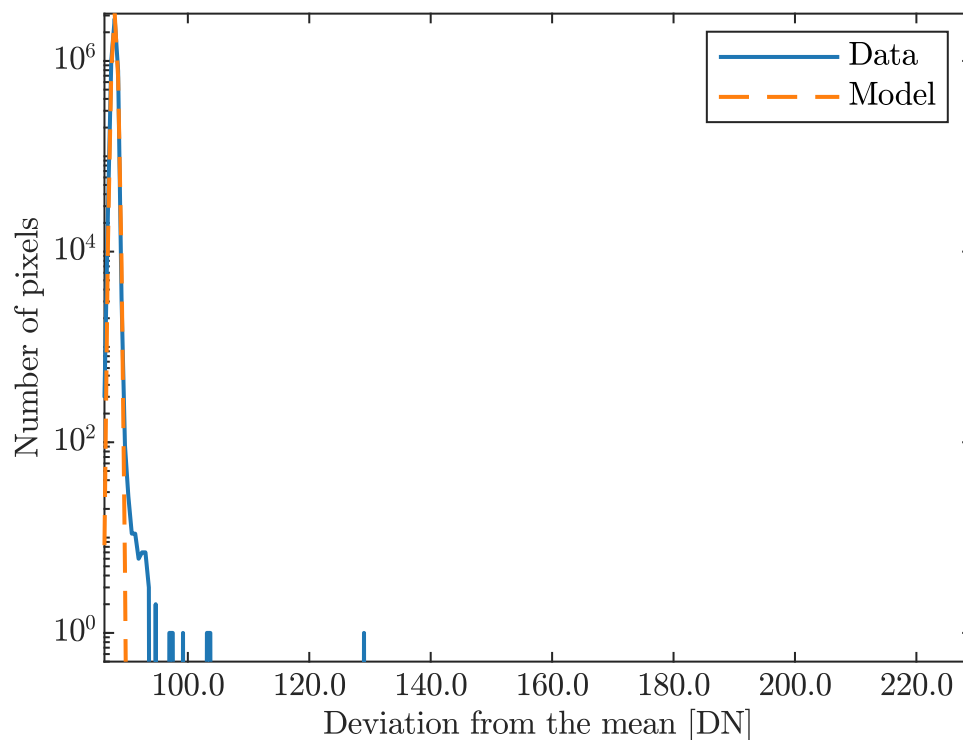
Vertical Spectrogram DSNU



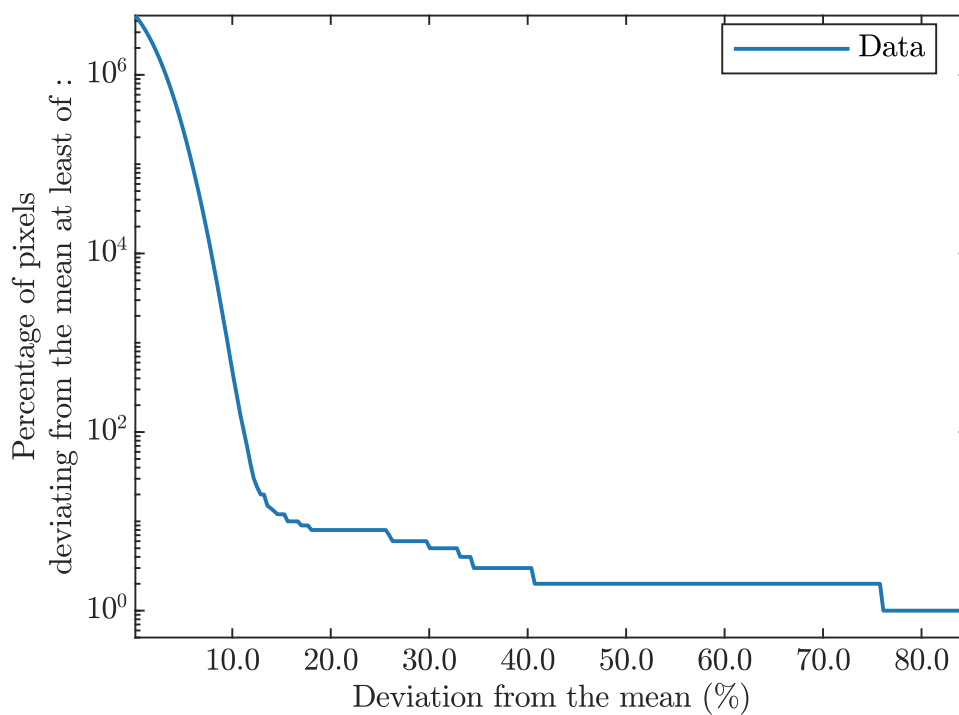
Logarithmic Histogram PRNU



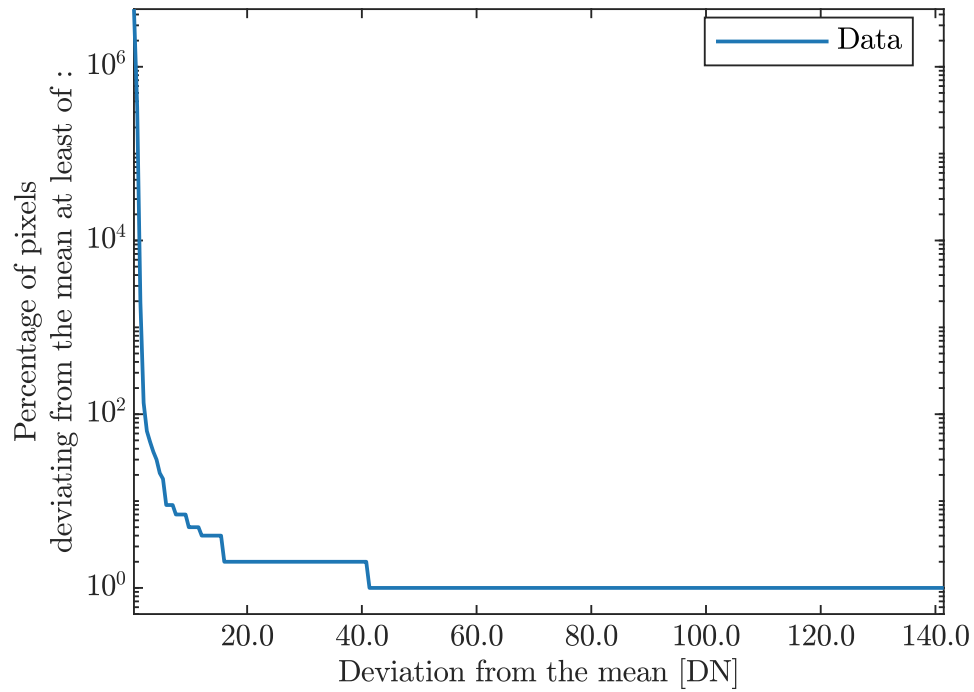
Logarithmic Histogram DSNU



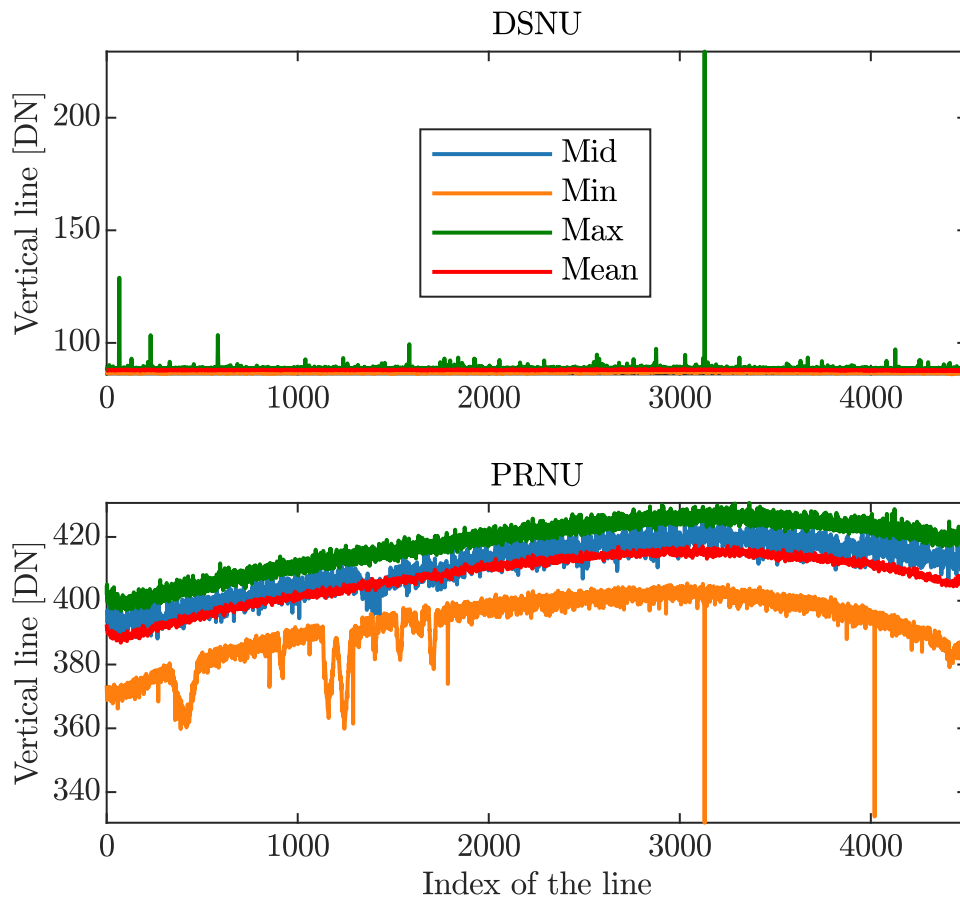
Accumulated Log Histogram PRNU



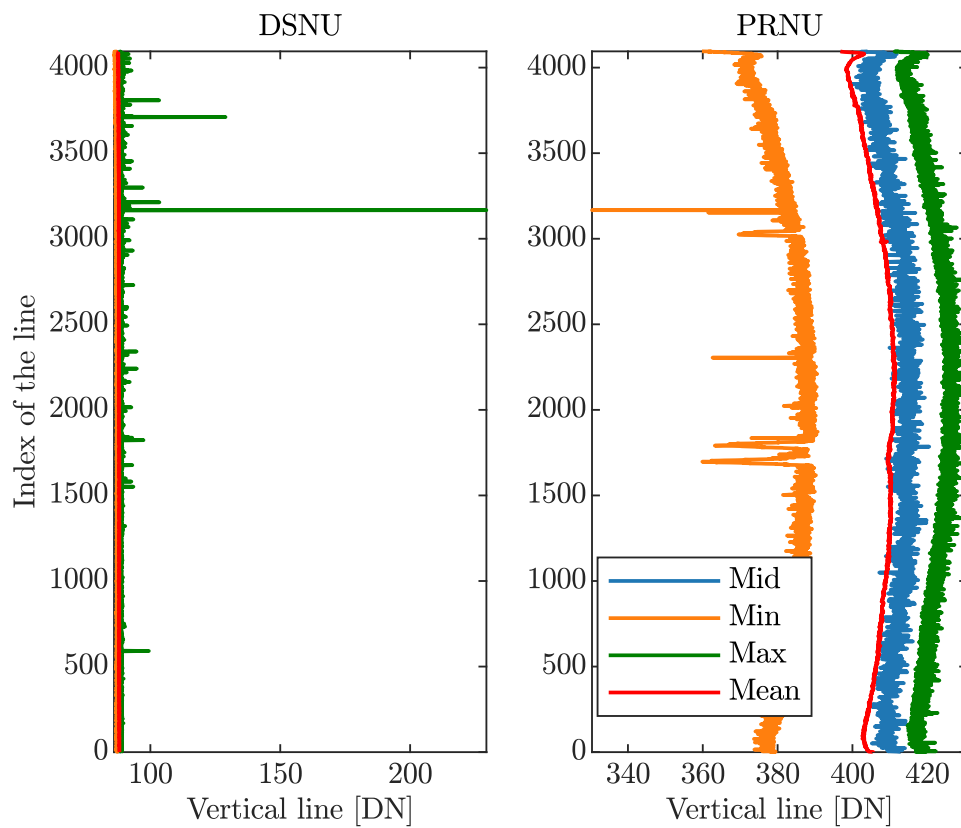
Accumulated Log Histogram DSNU



Horizontal Profile



Vertical Profile



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

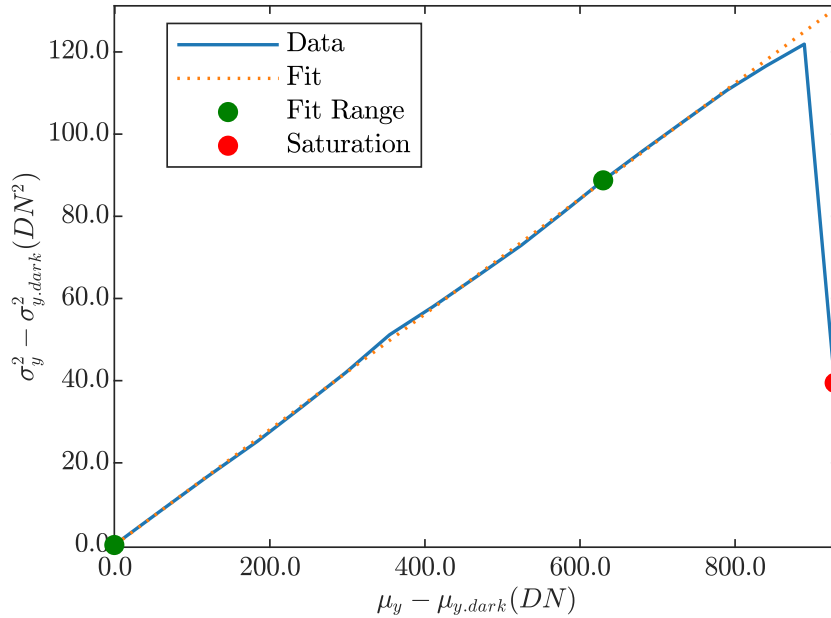
Camera setting

Gain	1.75
Black level	-500

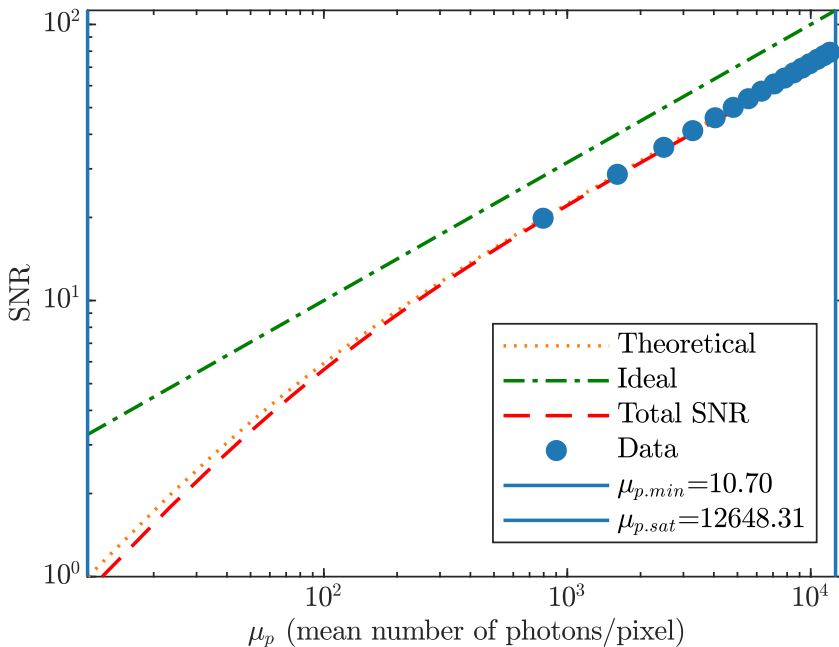
Operation point parameters

Environmental temperature	21.43
Camera body temperature	42.87
Sensor temperature	52
Processor temperature	51

Photon Transfer



Signal-to-Noise Ratio



Performance

Quantum efficiency

η	52.7315	%
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System gain

K	0.14048	DN/e ⁻
1/K	7.1184	e ⁻ /DN

Temporal dark noise

σ_d	4.7165	e ⁻
$\sigma_{y,dark}$	0.72274	DN

Signal-to-noise ratio

SNR _{max}	81.6679	
	38.241	dB
	6.3517	bit
1/SNR _{max}	1.2245	%

Absolute sensitivity threshold

$\mu_{e,min}$	5.6447	e ⁻
$\mu_{e,min,area}$	0.90316	e ⁻ /μm ²

Saturation capacity

$\mu_{e,sat}$	6669.6378	e ⁻
$\mu_{e,sat,area}$	1067.142	e ⁻ /μm ²

Dynamic range

DR	1181.5678	
	61.4492	dB
	10.2065	bit

Spatial nonuniformities

DSNU ₁₂₈₈	2.9682	e ⁻
DSNU _{1288,col}	0.93426	e ⁻
DSNU _{1288,row}	2.0142	e ⁻
DSNU _{1288,pix}	1.9698	e ⁻
PRNU ₁₂₈₈	0.49319	%
PRNU _{1288,col}	0.15544	%
PRNU _{1288,row}	0.034674	%
PRNU _{1288,pix}	0.46677	%

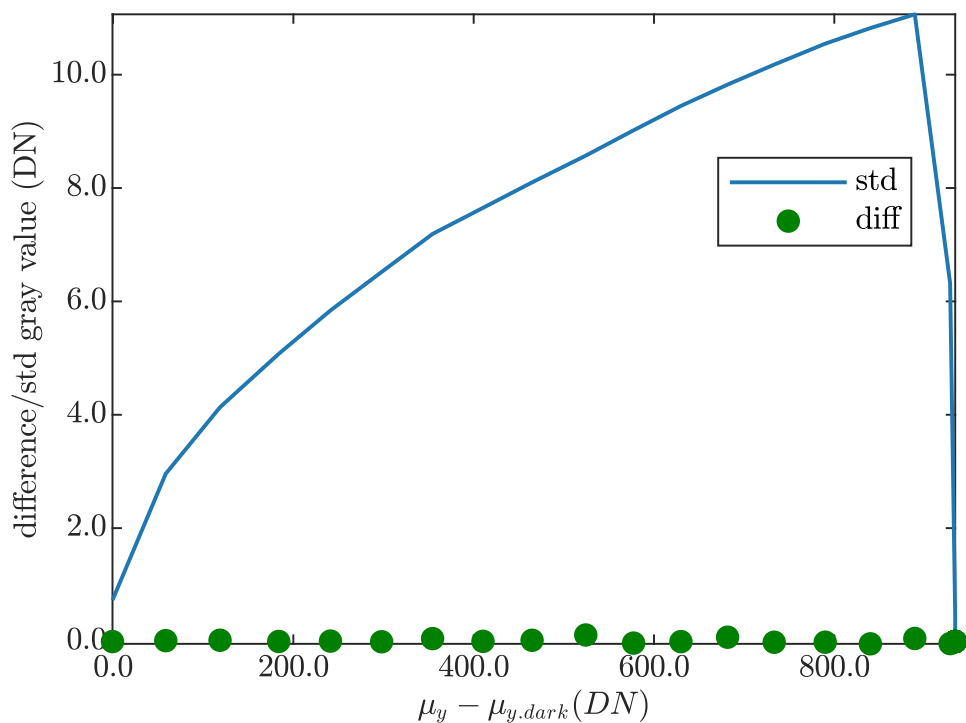
Linearity error

LE	0.00090168	%
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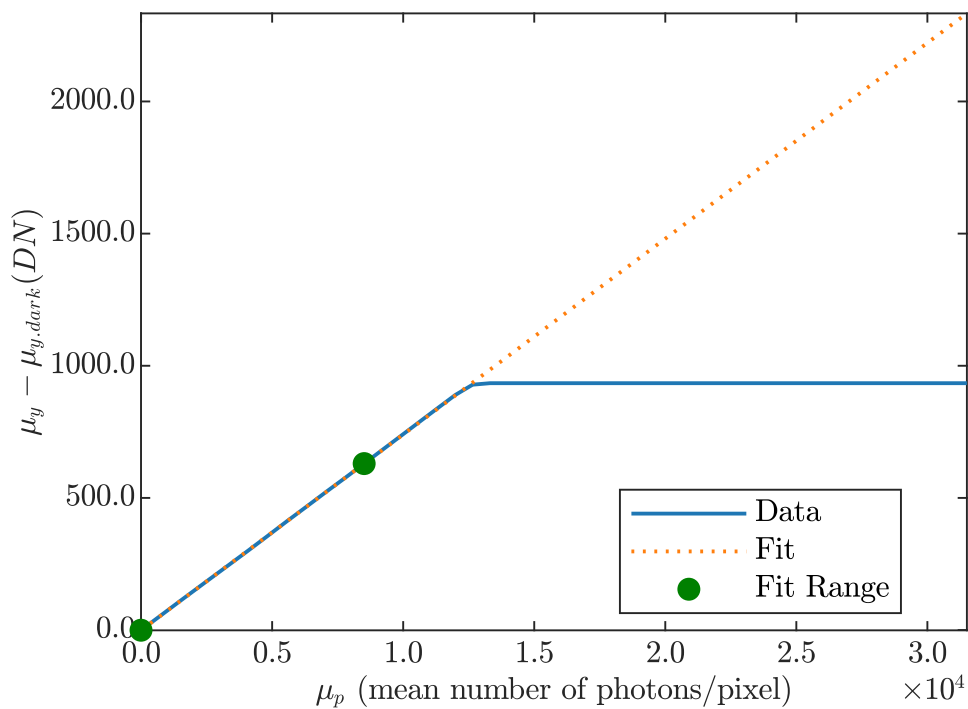
Dark current

$\mu_{l,mean}$	1054.5596	e ⁻ /s
$\mu_{l,var}$	NaN	e ⁻ /s

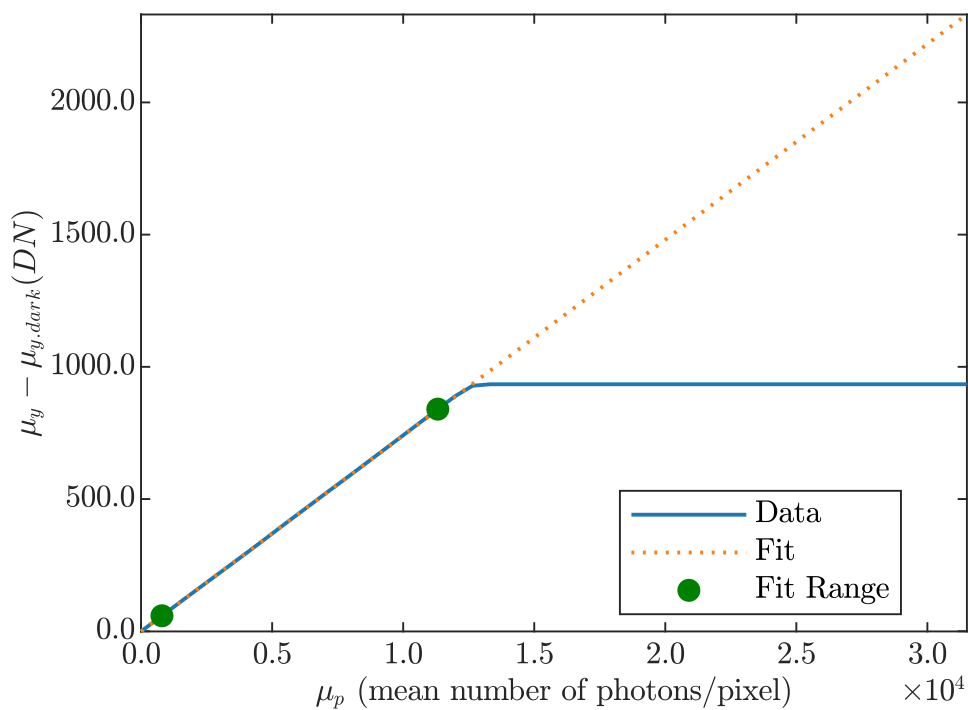
Stability check



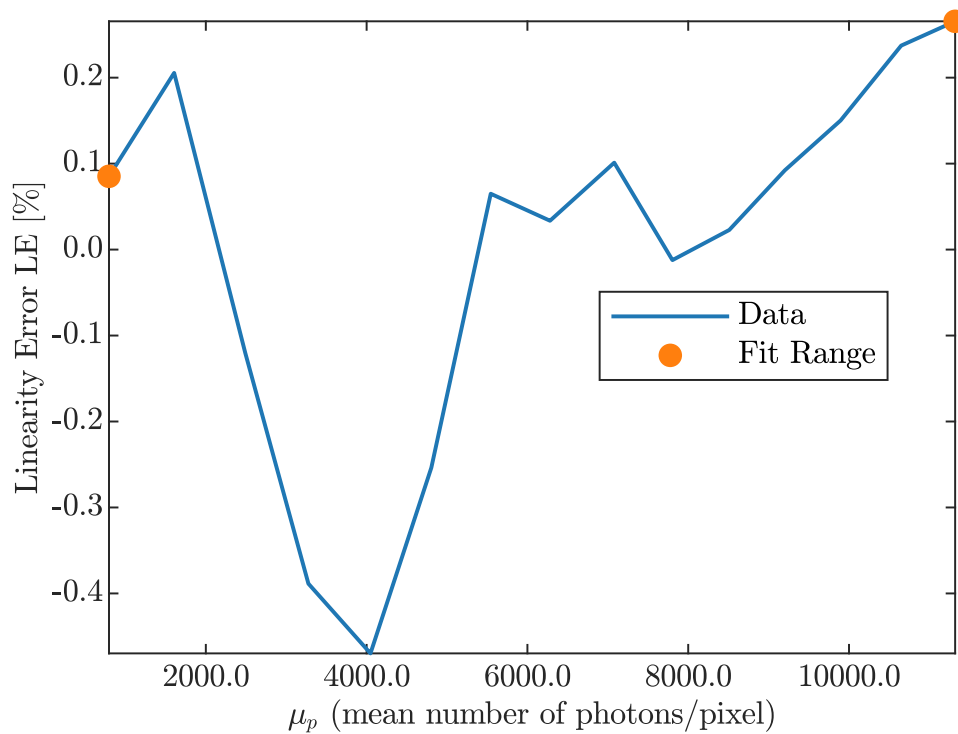
Sensitivity



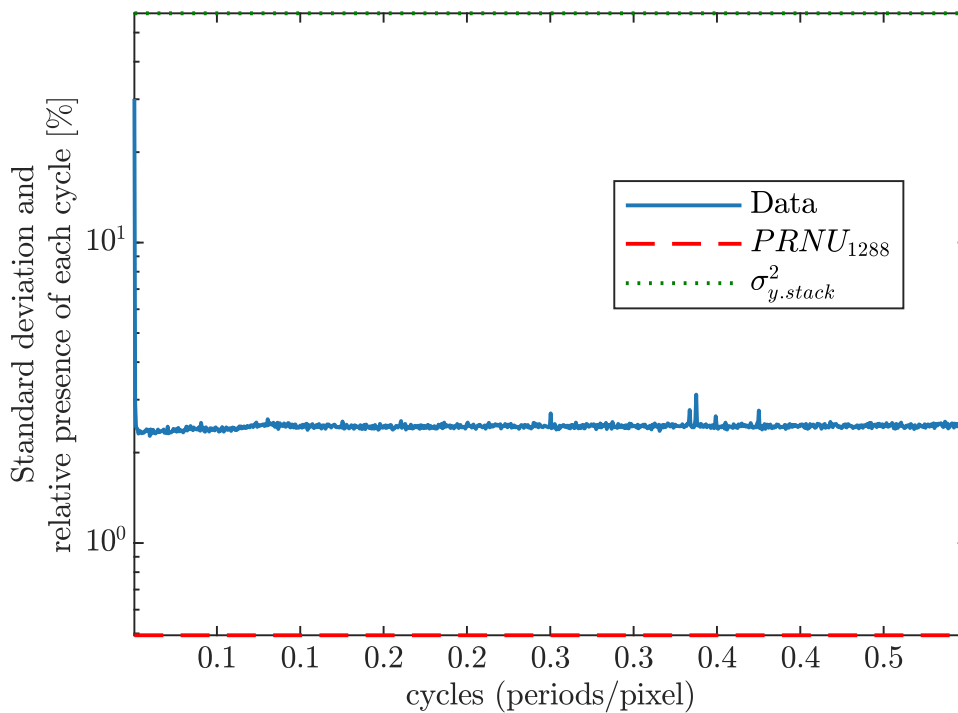
Linearity



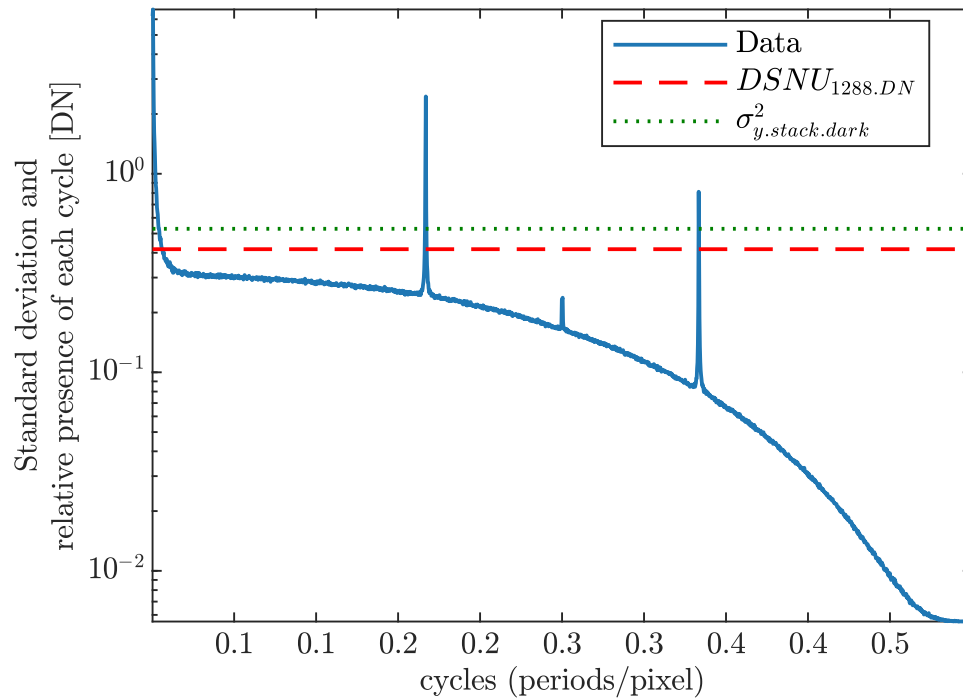
Deviation Linearity



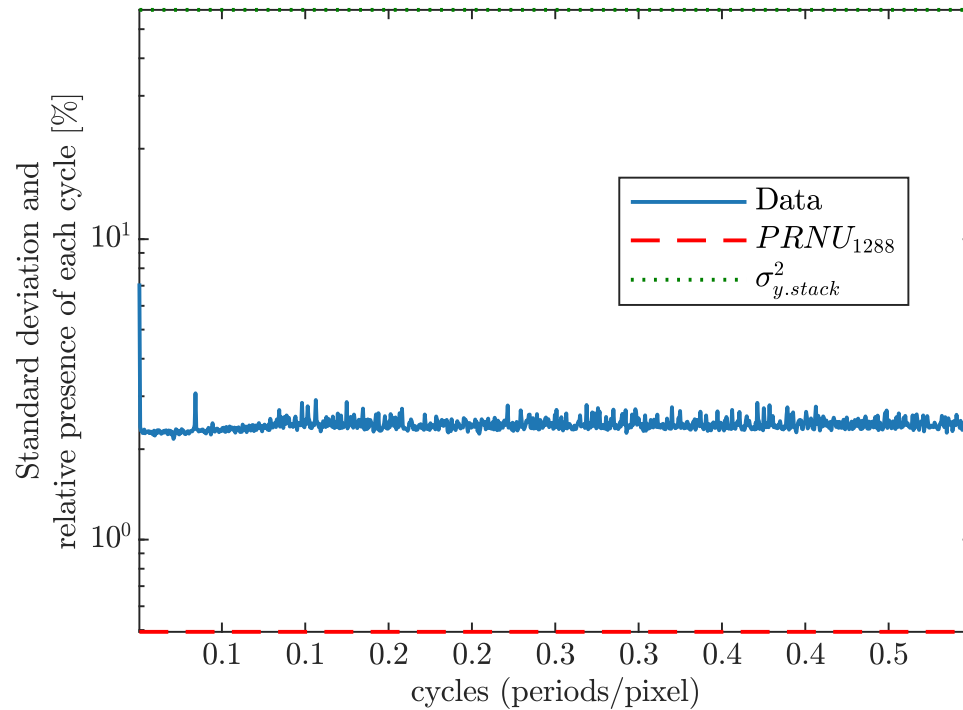
Horizontal Spectrogram PRNU



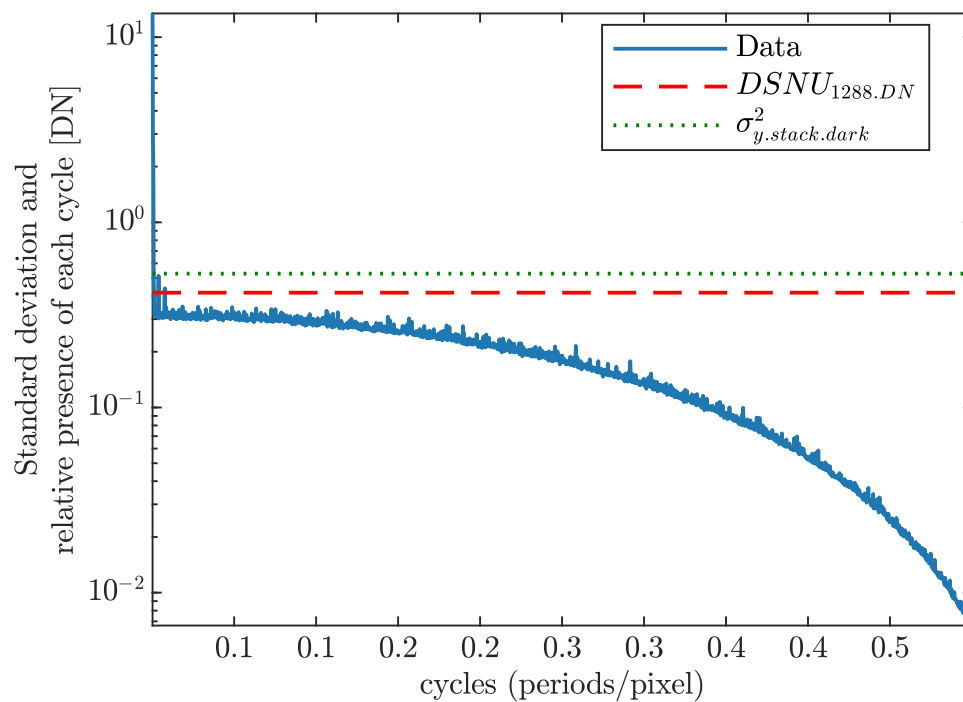
Horizontal Spectrogram DSNU



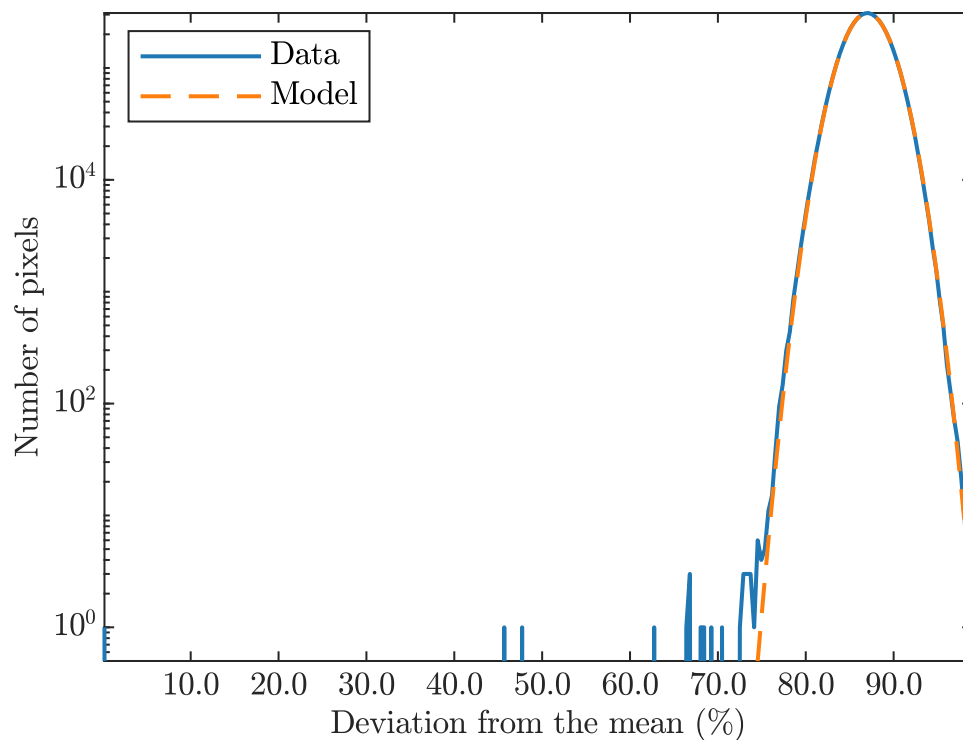
Vertical Spectrogram PRNU



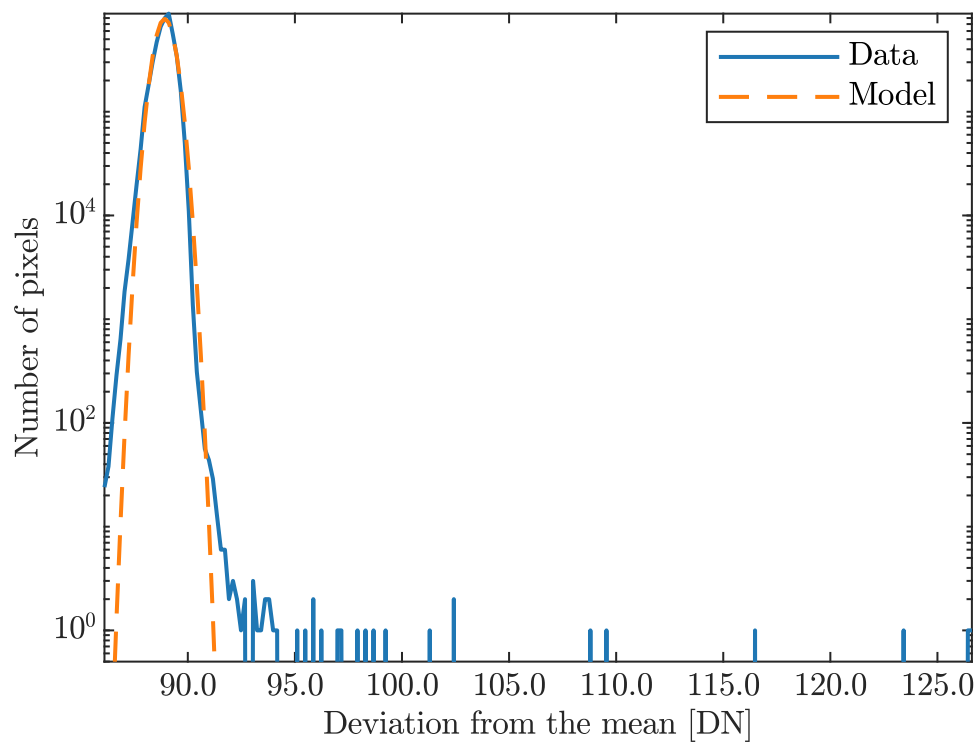
Vertical Spectrogram DSNU



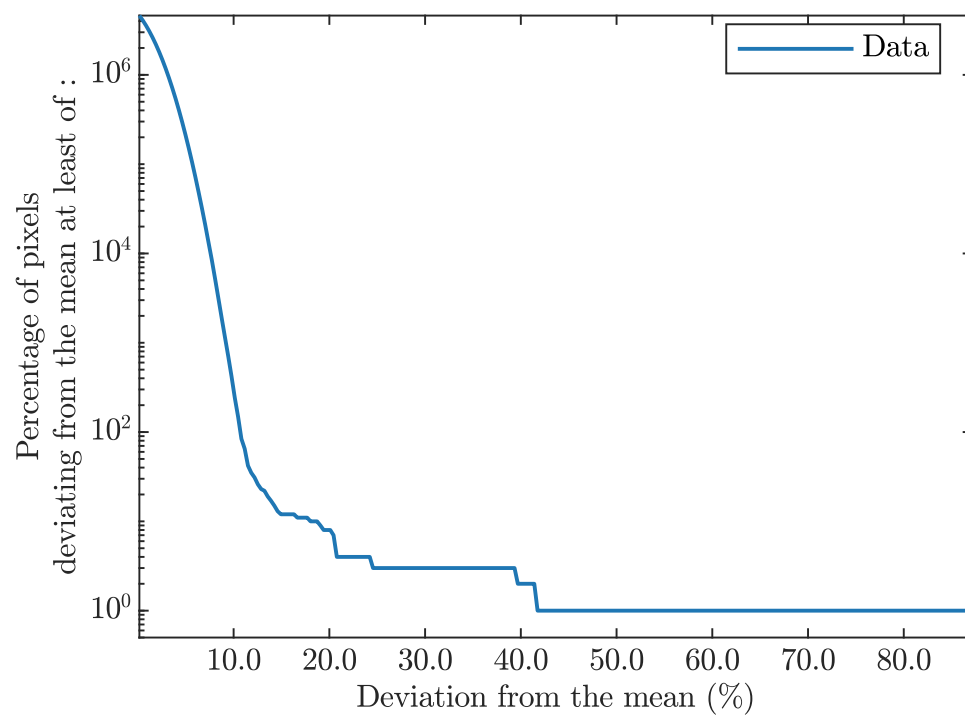
Logarithmic Histogram PRNU



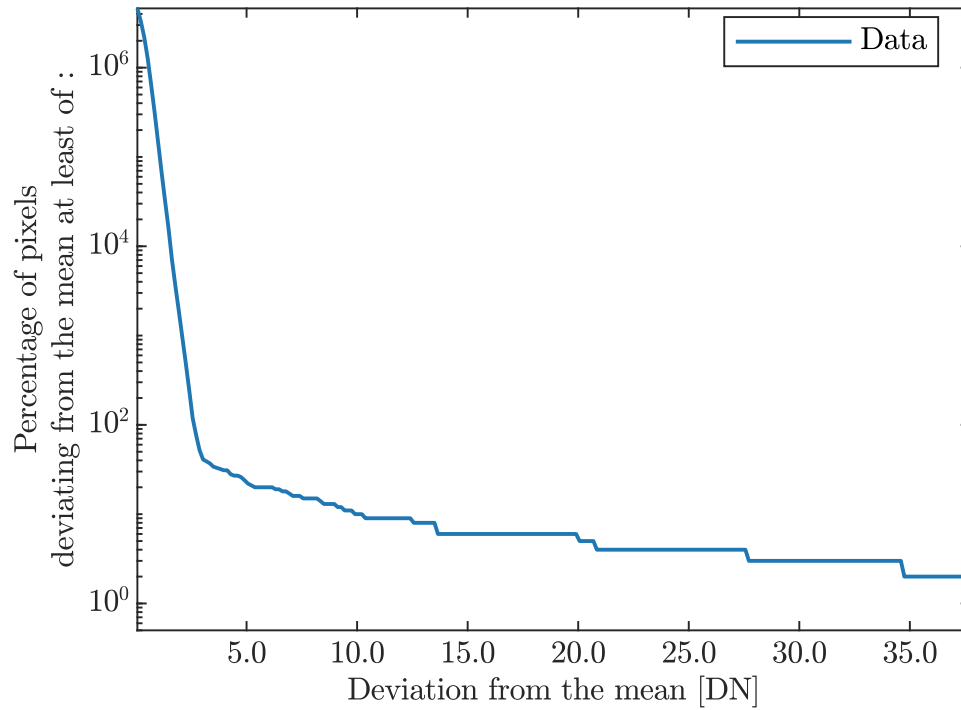
Logarithmic Histogram DSNU



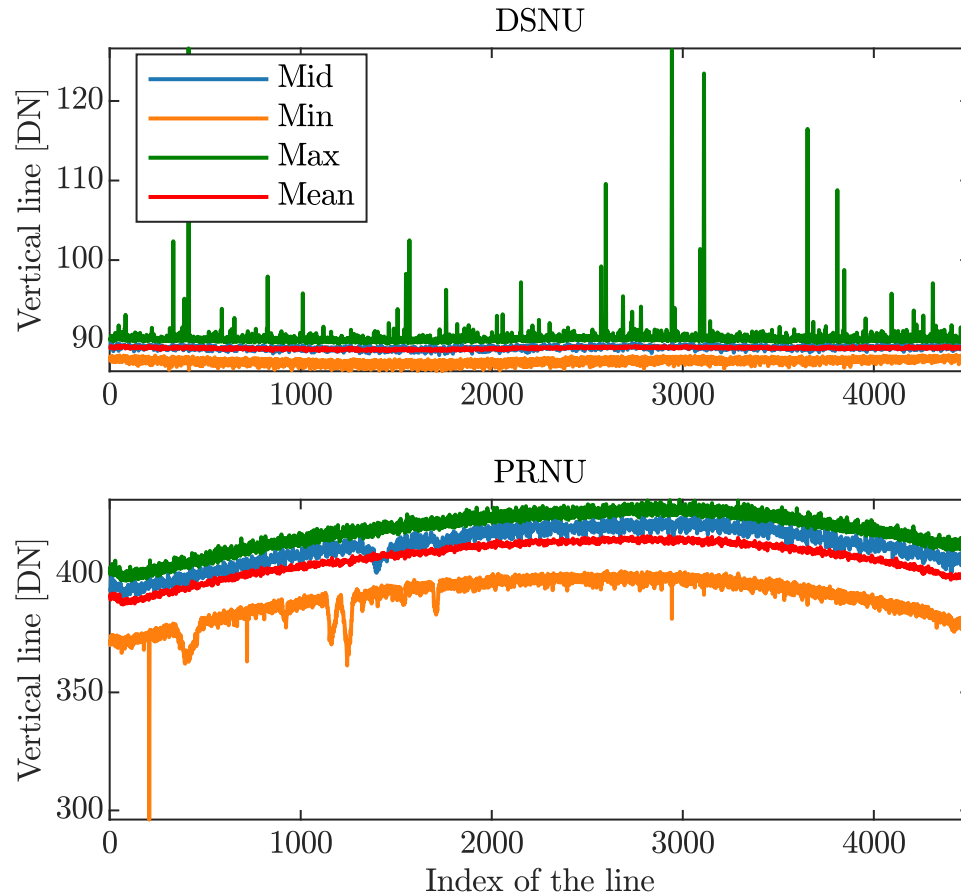
Accumulated Log Histogram PRNU



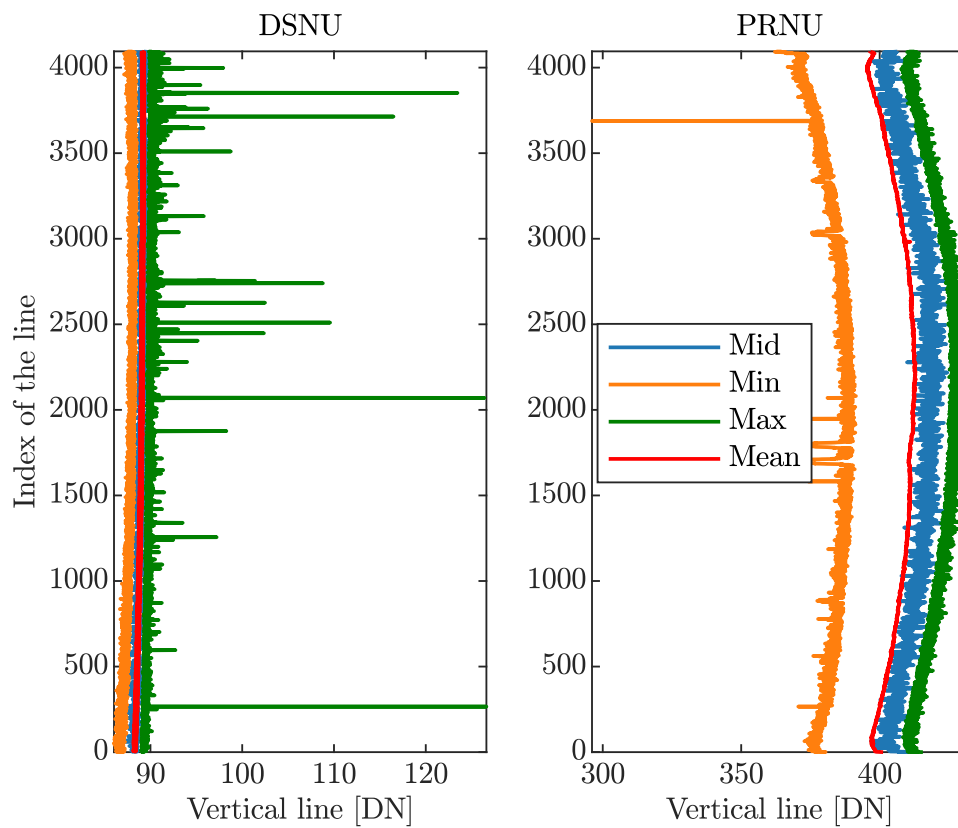
Accumulated Log Histogram DSNU



Horizontal Profile

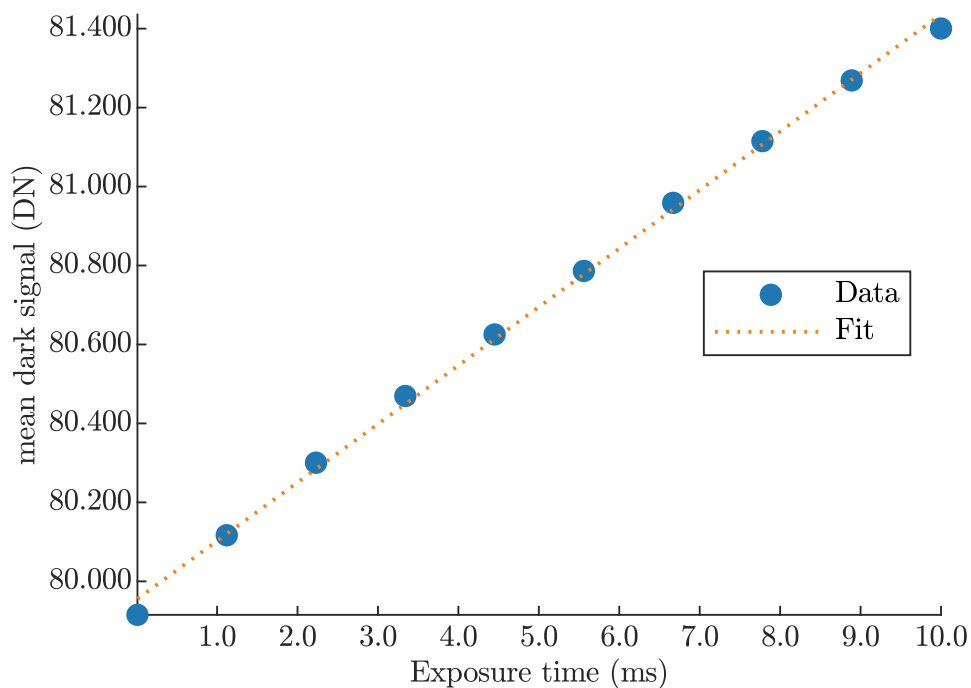


Vertical Profile

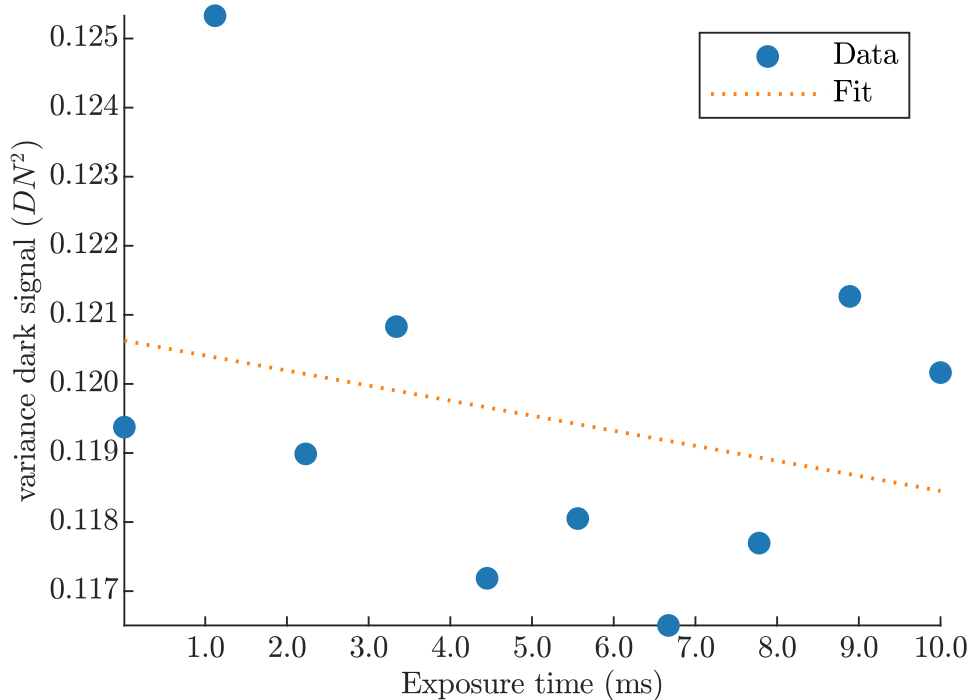


Dark Current

Dark Current from Mean



Dark Current from Variance



International Distributor

sky blue
microsystems

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