

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	16.1mm
Model	Iron255C	Sensor	IMX255
Camera type	Color	Sensor type	CMOS
Date	11-Oct-2022 13:17:03	Shutter type	Global
Data type	Single	Overlap capabilities	Overlapping
Sensor type	CMOS	Frame rate	39 Hz
Lens category	C-Mount	Exposure control	by irradiance
Resolution	4096 x 2160 ,12 bits	Exposure time	9000.2031 μ s
Pixel size	3.45 μ m x 3.45 μ m	Illumination	Variable with constant exposure time
Maximum readout rate	57 fps	Irradiation Steps	50
Dark current compensation	No	Irradiation calibration accuracy	-
Interface type	CXP-12	Irradiation measurement error	-
Serial number	1320021	Standart version	4.0 Linear
Firmware version	3.1-2020.3.31	Light source	Integrating Sphere

International Distributor



Sky Blue Microsystems GmbH
Geisenhausenerstr. 18
81379 Munich, Germany
+49 89 780 2970, info@skyblue.de
www.skyblue.de

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

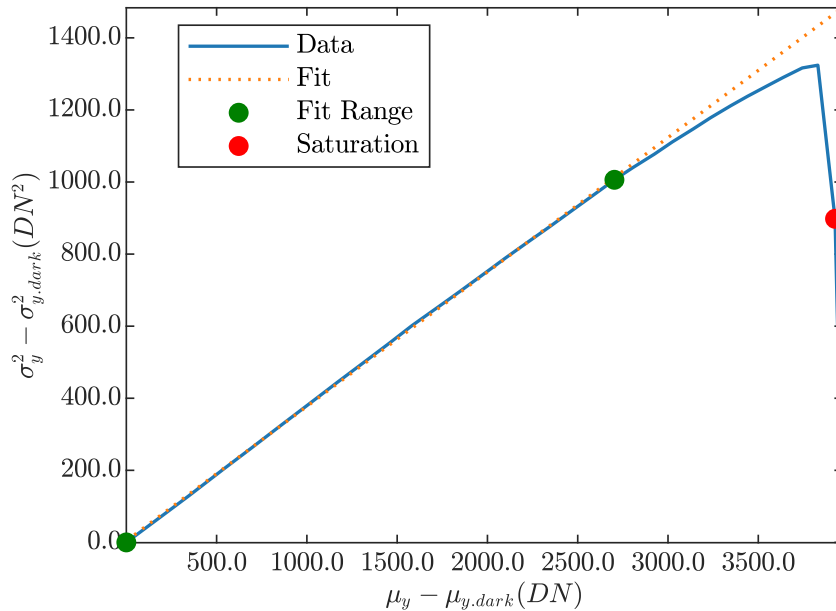
Camera setting

Gain	GainLevelx1
Black level	128

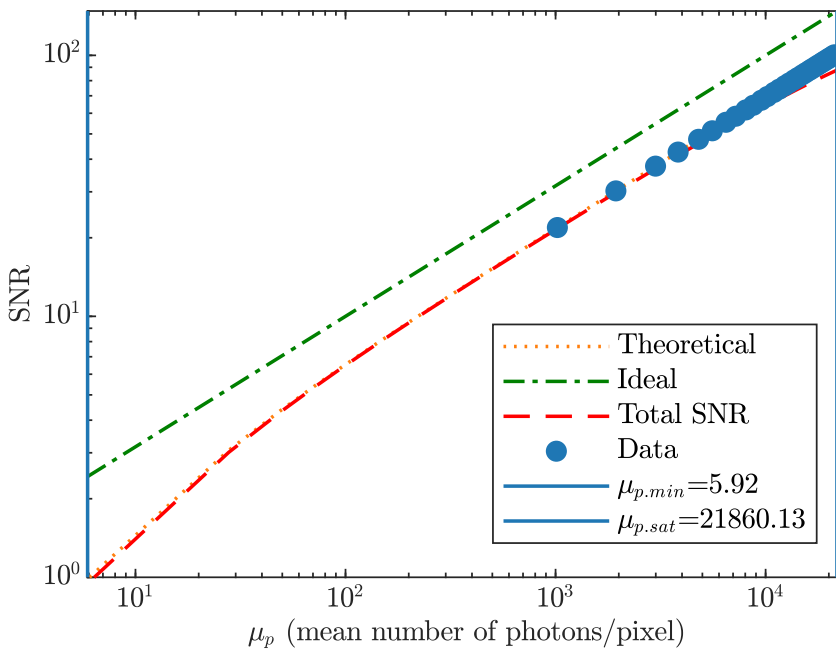
Operation point parameters

Environmental temperature	25.87
Camera body temperature	33.25
Sensor temperature	40.808
Processor temperature	40

Photon Transfer



Signal-to-Noise Ratio



Performance

Quantum efficiency

η	47.4866	%
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System gain

K	0.3807	DN/e ⁻
1/K	2.6267	e ⁻ /DN

Temporal dark noise

σ_d	2.1818	e ⁻
$\sigma_{y,dark}$	0.87935	DN

Signal-to-noise ratio

SNR _{max}	101.8854	
	40.1622	dB
	6.6708	bit
1/SNR _{max}	0.9815	%

Absolute sensitivity threshold

$\mu_{e,min}$	2.8098	e ⁻
$\mu_{e,min,area}$	0.23607	e ⁻ /μm ²

Saturation capacity

$\mu_{e,sat}$	10380.625	e ⁻
$\mu_{e,sat,area}$	872.1382	e ⁻ /μm ²

Dynamic range

DR	3694.4153	
	71.3509	dB
	11.8511	bit

Spatial nonuniformities

DSNU ₁₂₈₈	0.81654	e ⁻
DSNU _{1288,col}	0.11918	e ⁻
DSNU _{1288,row}	0.092646	e ⁻
DSNU _{1288,pix}	0.80247	e ⁻
PRNU ₁₂₈₈	0.57814	%
PRNU _{1288,col}	0.15934	%
PRNU _{1288,row}	0.0067086	%
PRNU _{1288,pix}	0.55571	%

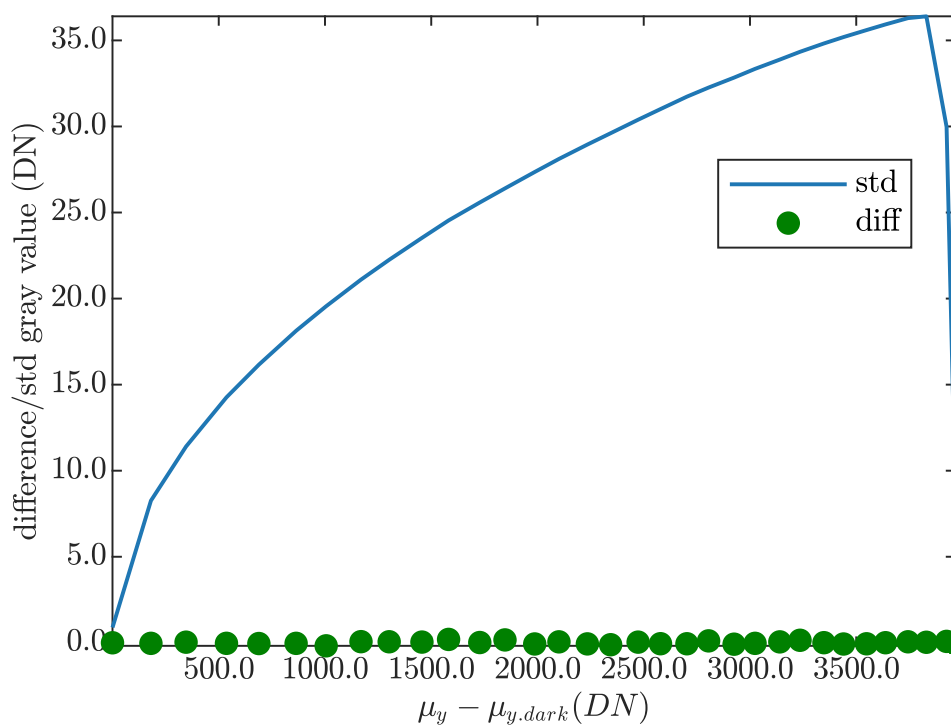
Linearity error

LE	0.00053237	%
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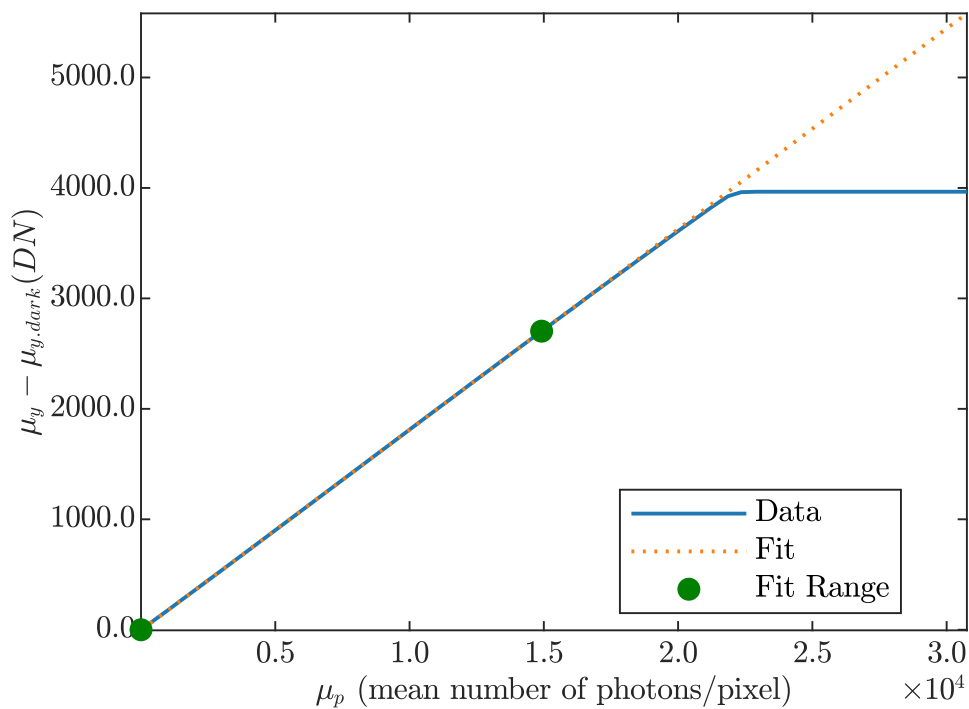
Dark current

$\mu_{l,mean}$	14.4005	e ⁻ /s
$\mu_{l,var}$	3.4223	e ⁻ /s

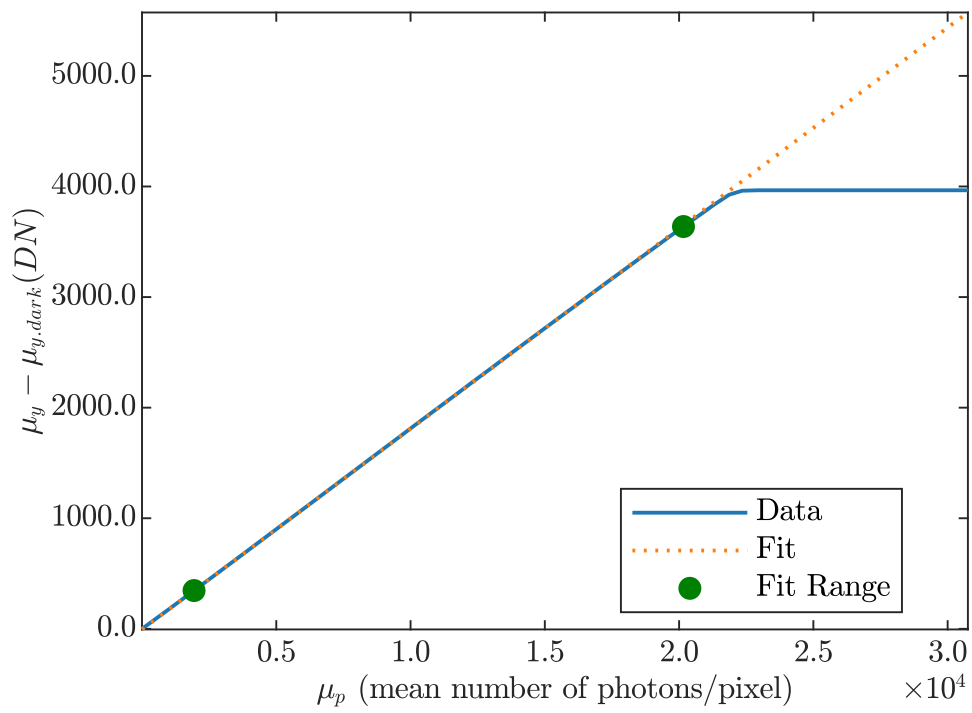
Stability check



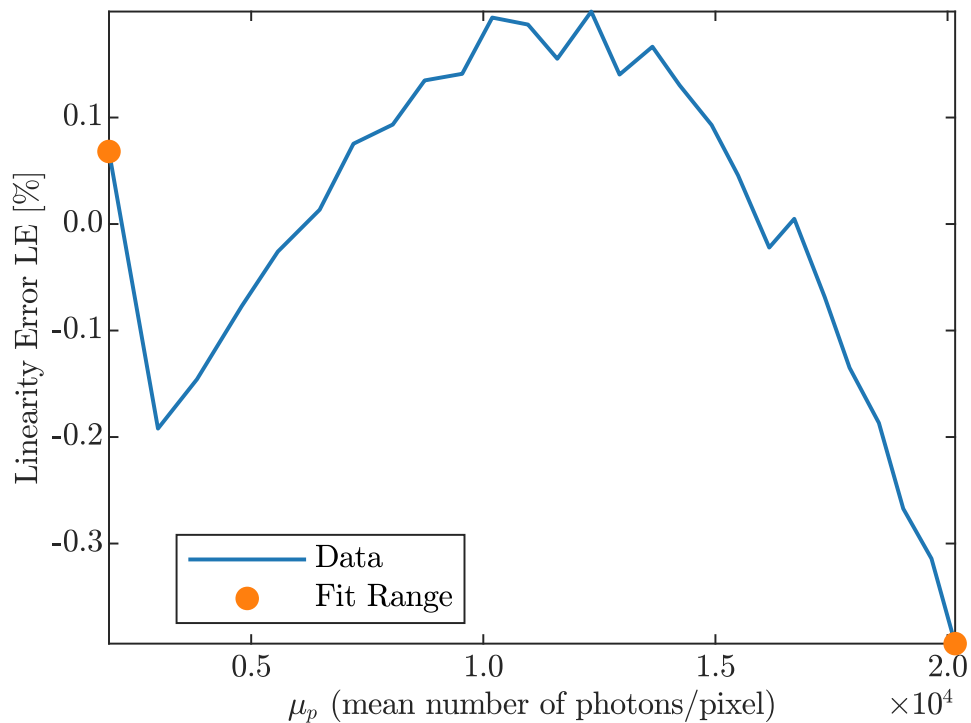
Sensitivity



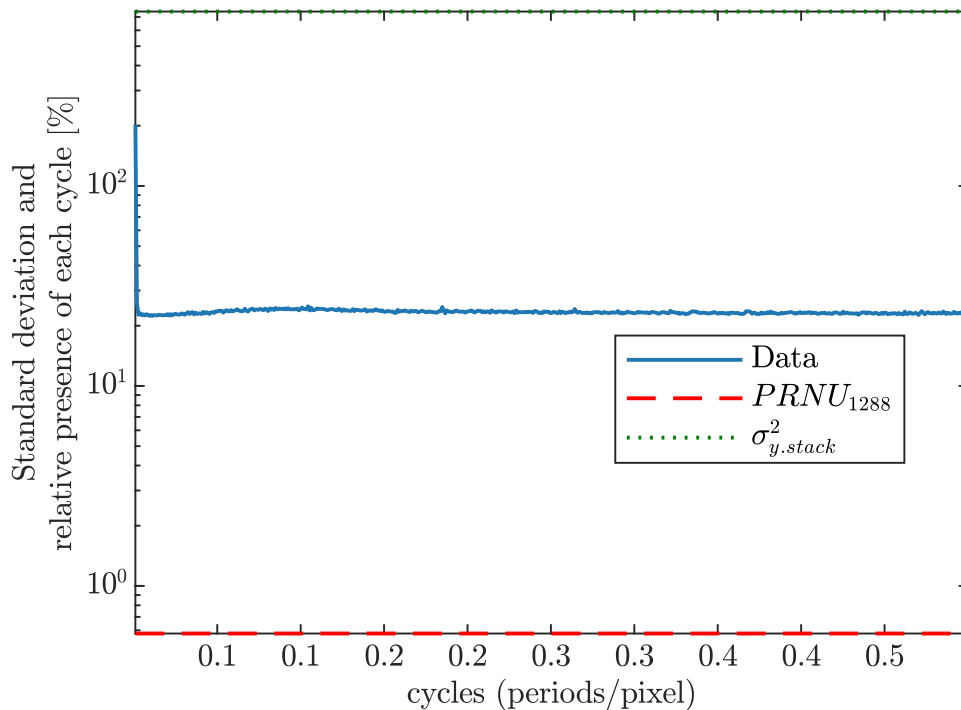
Linearity



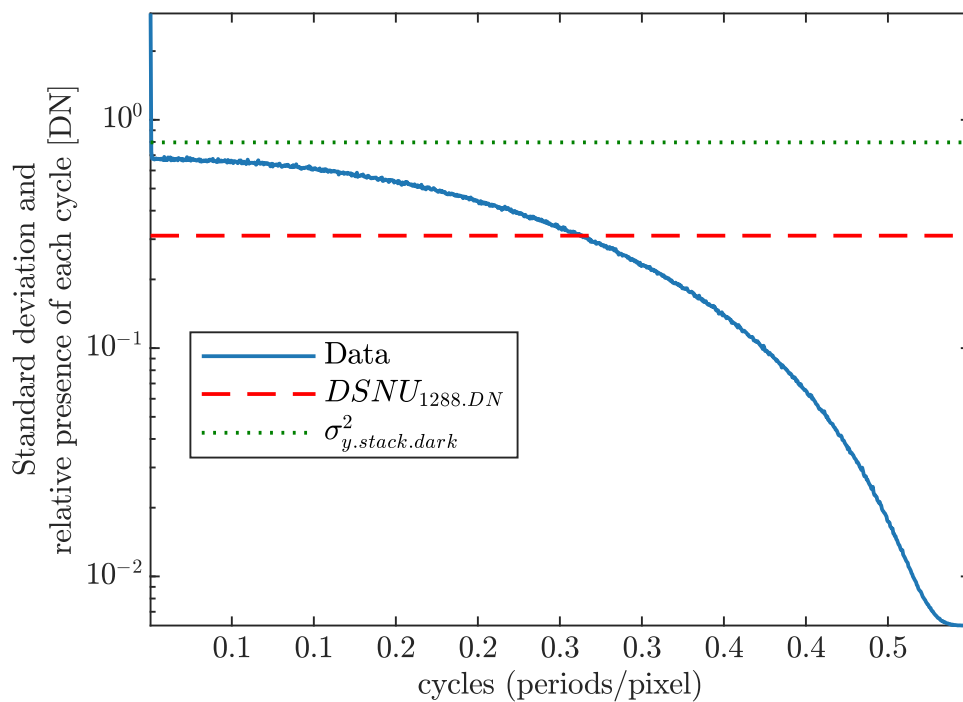
Deviation Linearity



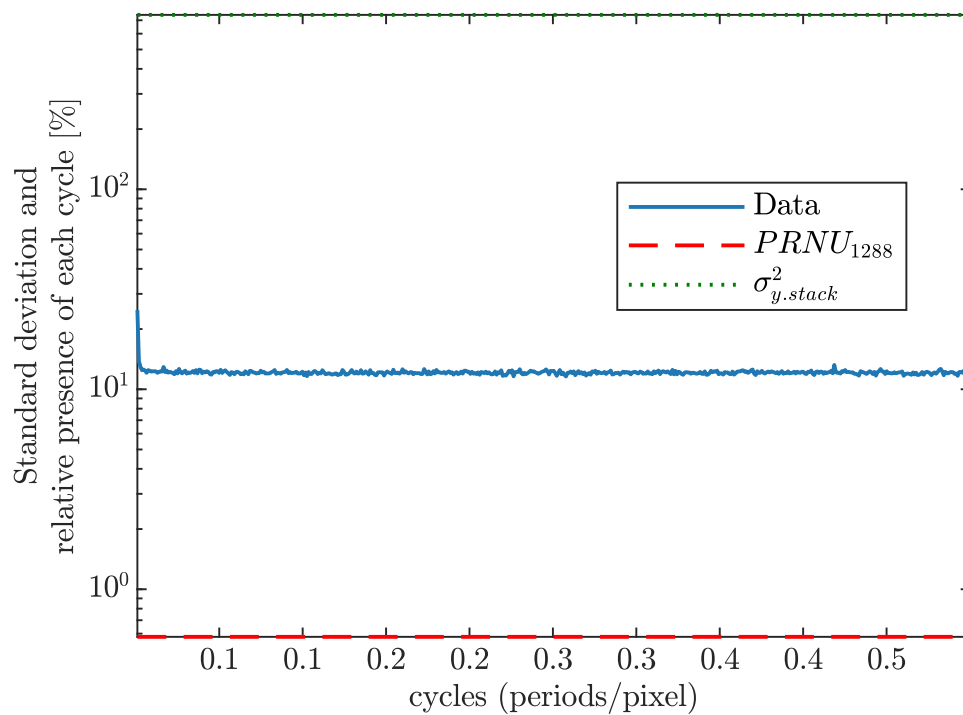
Horizontal Spectrogram PRNU



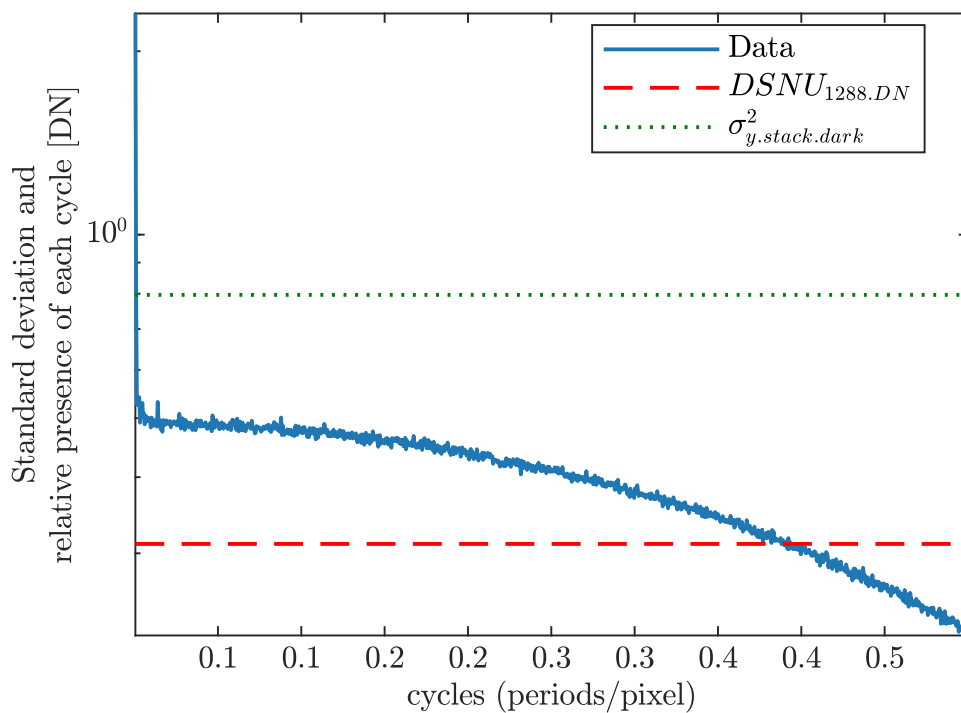
Horizontal Spectrogram DSNU



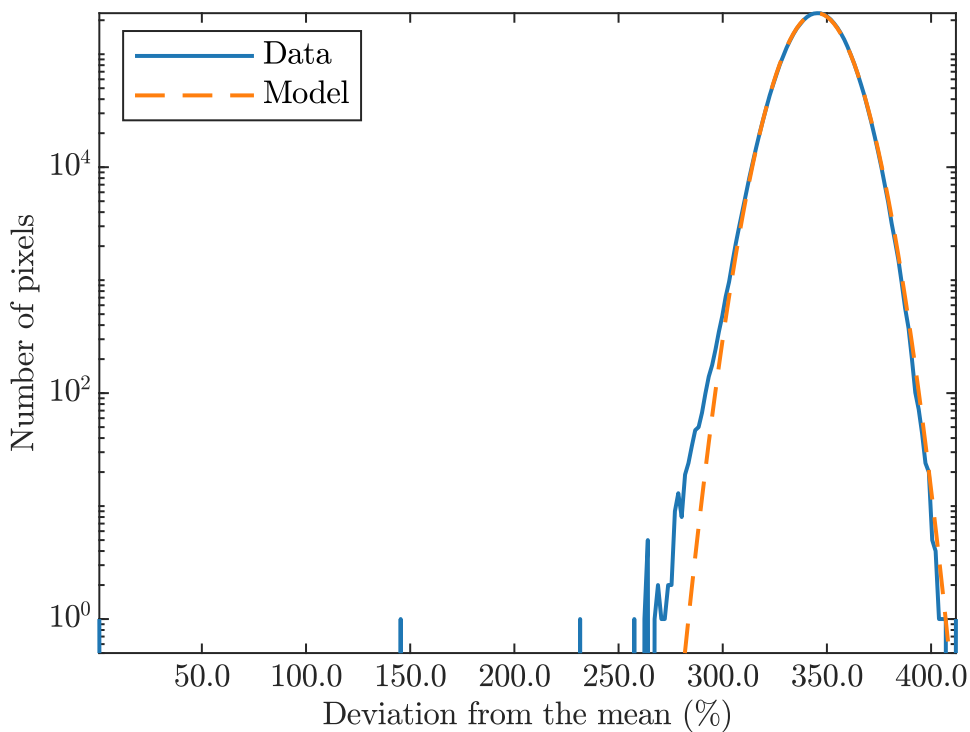
Vertical Spectrogram PRNU



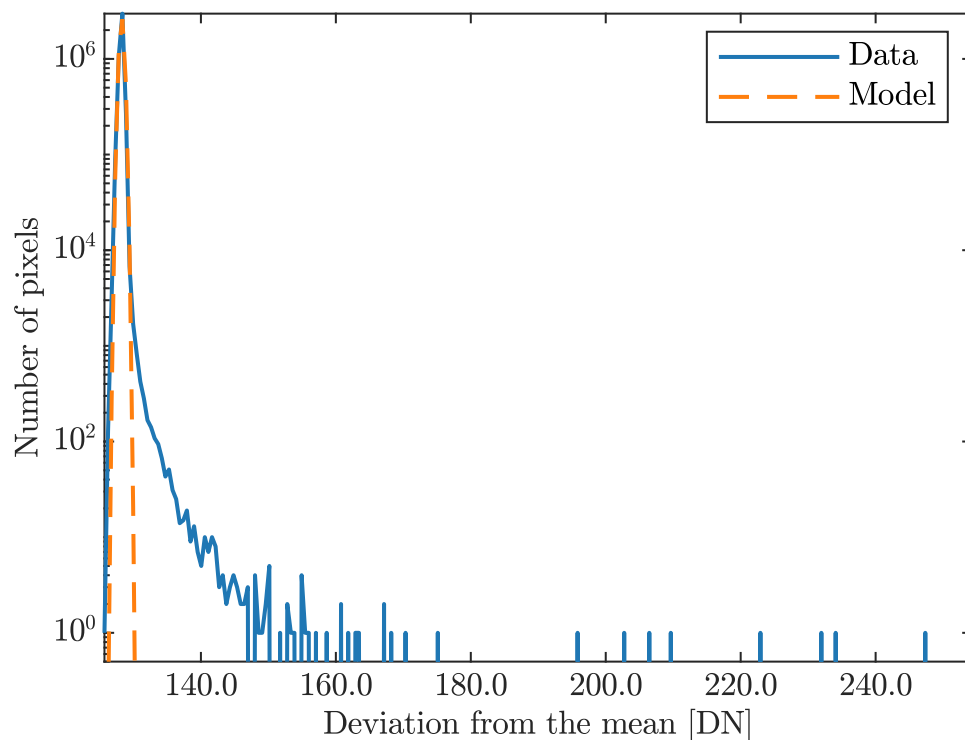
Vertical Spectrogram DSNU



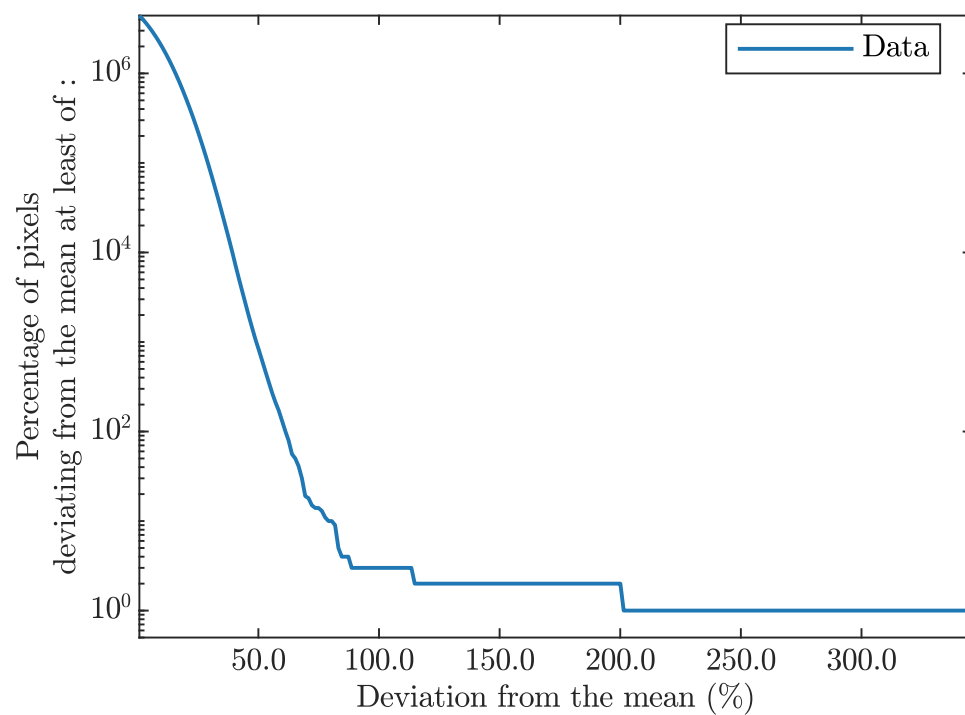
Logarithmic Histogram PRNU



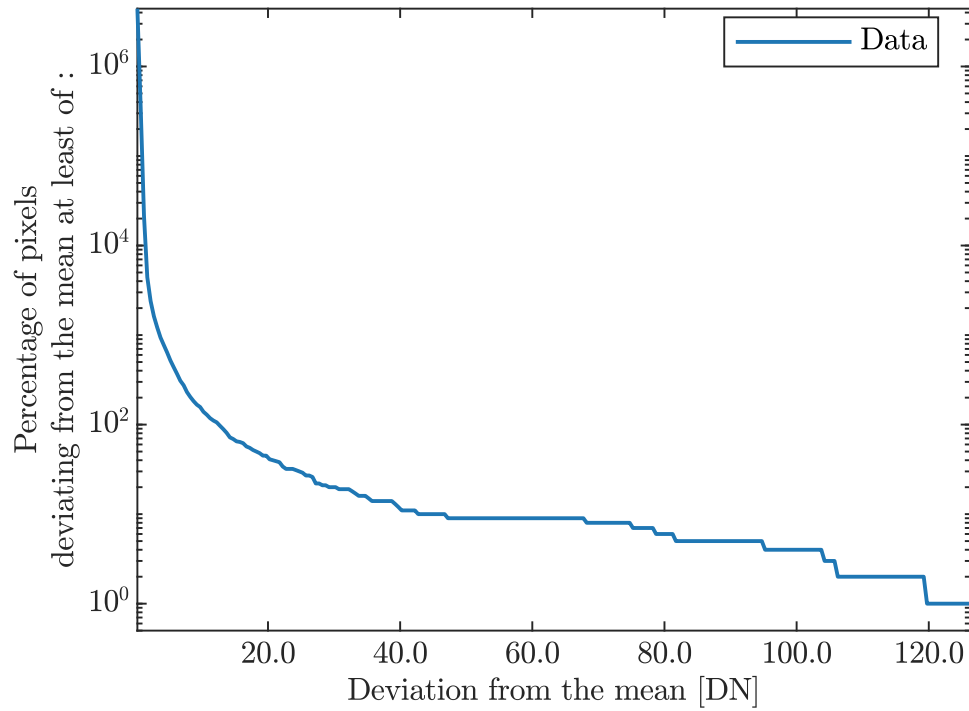
Logarithmic Histogram DSNU



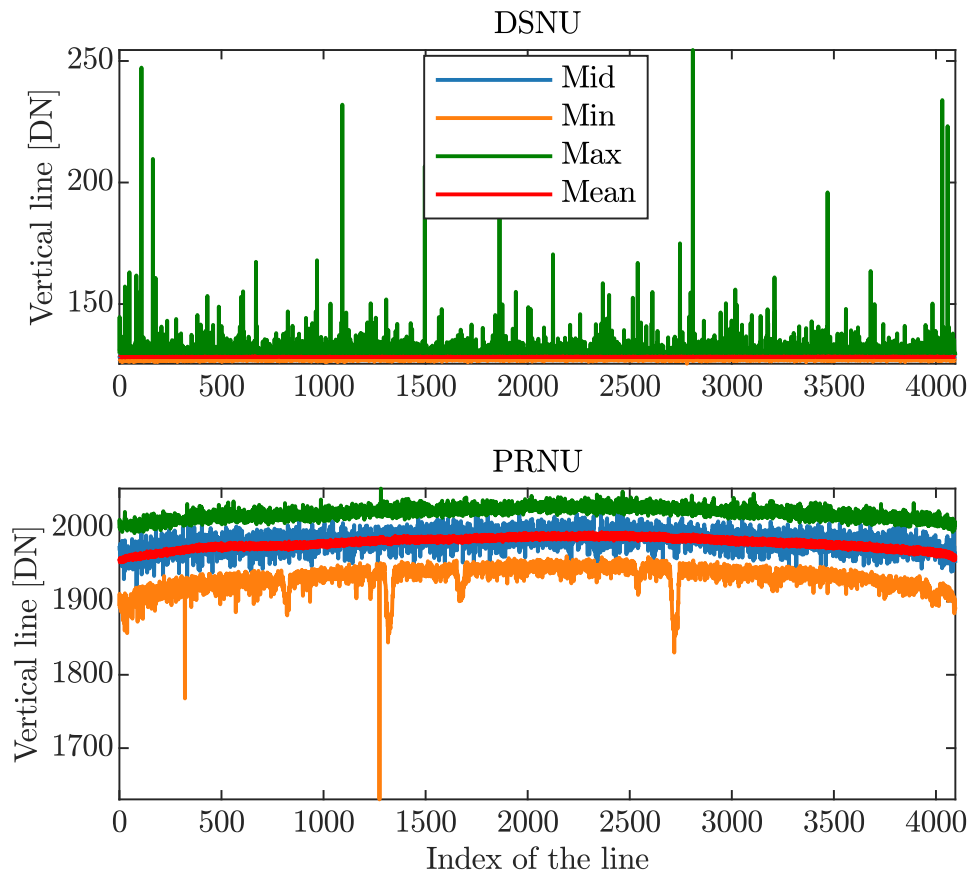
Accumulated Log Histogram PRNU



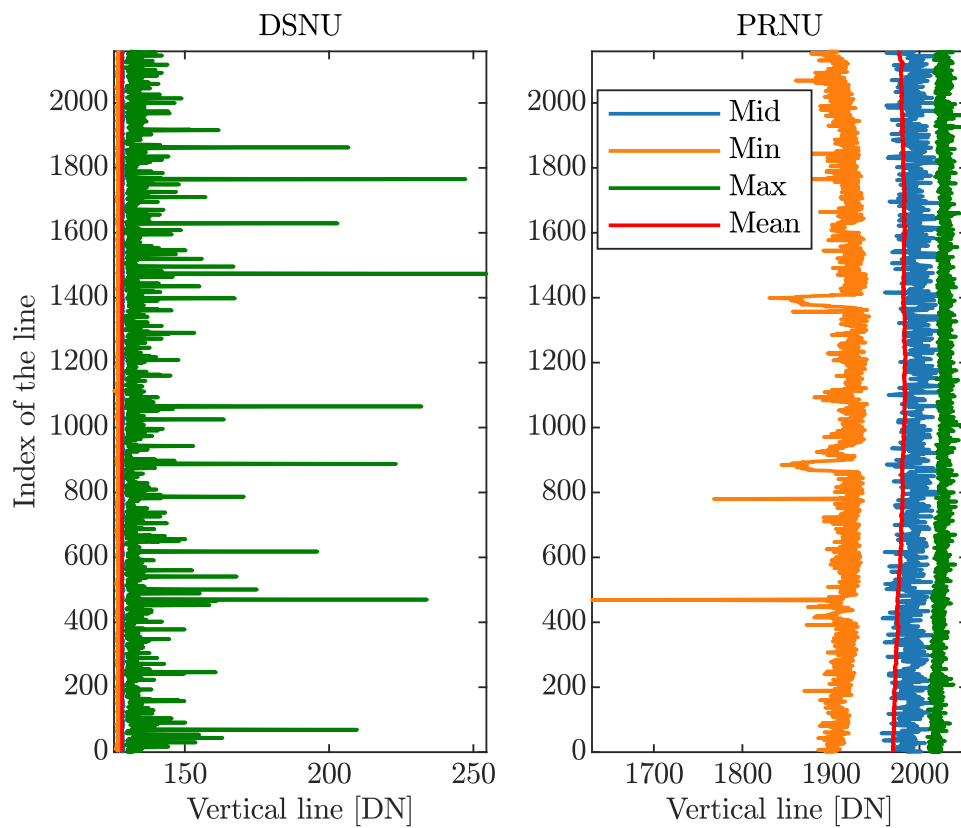
Accumulated Log Histogram DSNU



Horizontal Profile



Vertical Profile



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

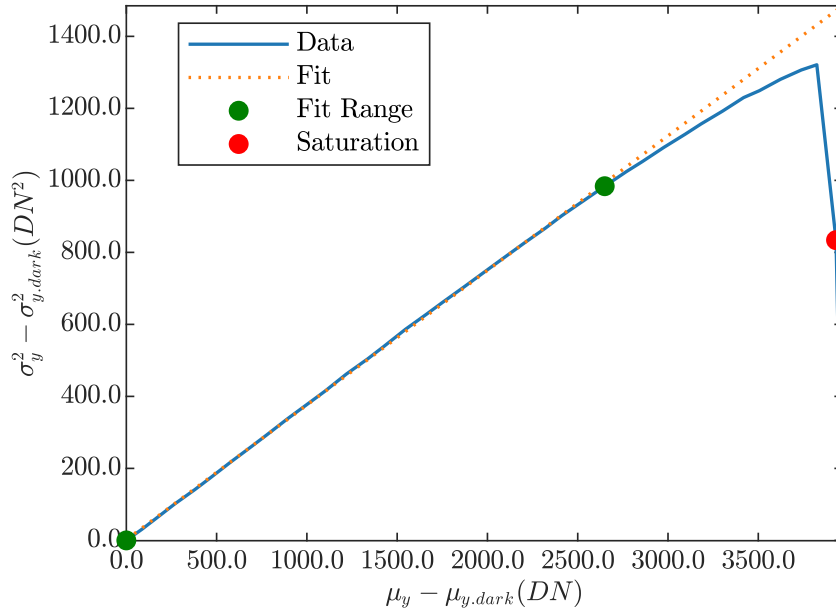
Camera setting

Gain	GainLevelx1
Black level	128

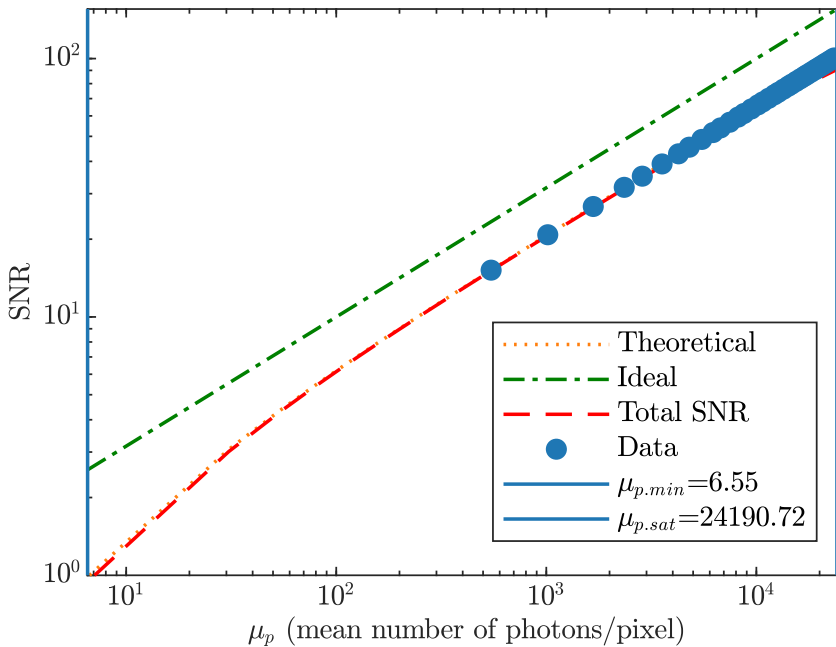
Operation point parameters

Environmental temperature	25.75
Camera body temperature	33.18
Sensor temperature	40.808
Processor temperature	40

Photon Transfer



Signal-to-Noise Ratio



Performance

Quantum efficiency

η	43.1156	%
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System gain

K	0.37826	DN/e ⁻
1/K	2.6437	e ⁻ /DN

Temporal dark noise

σ_d	2.1959	e ⁻
$\sigma_{y,dark}$	0.87935	DN

Signal-to-noise ratio

SNR _{max}	102.1273	
	40.1828	dB
	6.6742	bit
1/SNR _{max}	0.97917	%

Absolute sensitivity threshold

$\mu_{e,min}$	2.8247	e ⁻
$\mu_{e,min,area}$	0.23732	e ⁻ /μm ²

Saturation capacity

$\mu_{e,sat}$	10429.9784	e ⁻
$\mu_{e,sat,area}$	876.2847	e ⁻ /μm ²

Dynamic range

DR	3692.3795	
	71.3461	dB
	11.8503	bit

Spatial nonuniformities

DSNU ₁₂₈₈	0.85389	e ⁻
DSNU _{1288,col}	0.11488	e ⁻
DSNU _{1288,row}	0.1057	e ⁻
DSNU _{1288,pix}	0.8395	e ⁻
PRNU ₁₂₈₈	0.50524	%
PRNU _{1288,col}	0.042078	%
PRNU _{1288,row}	0.020031	%
PRNU _{1288,pix}	0.50309	%

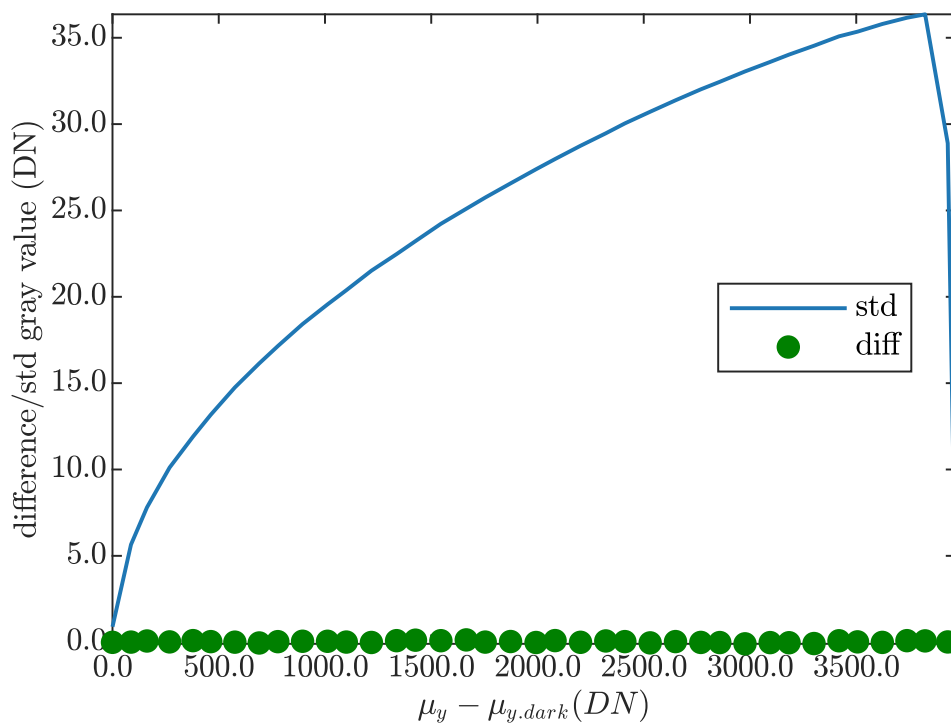
Linearity error

LE	0.00045736	%
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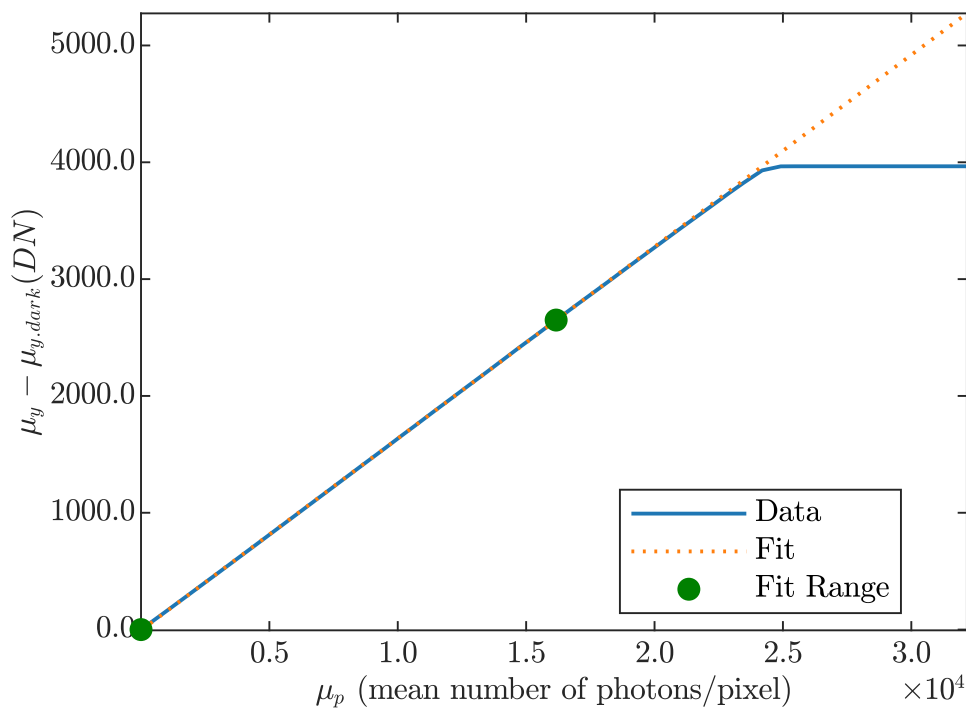
Dark current

$\mu_{l,mean}$	14.4005	e ⁻ /s
$\mu_{l,var}$	3.4223	e ⁻ /s

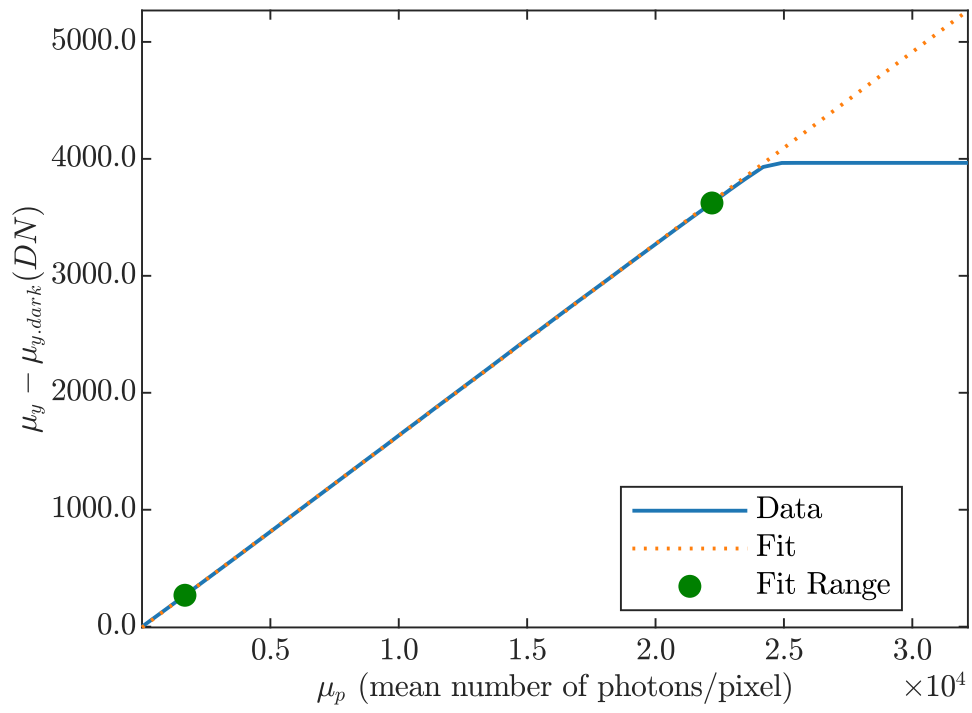
Stability check



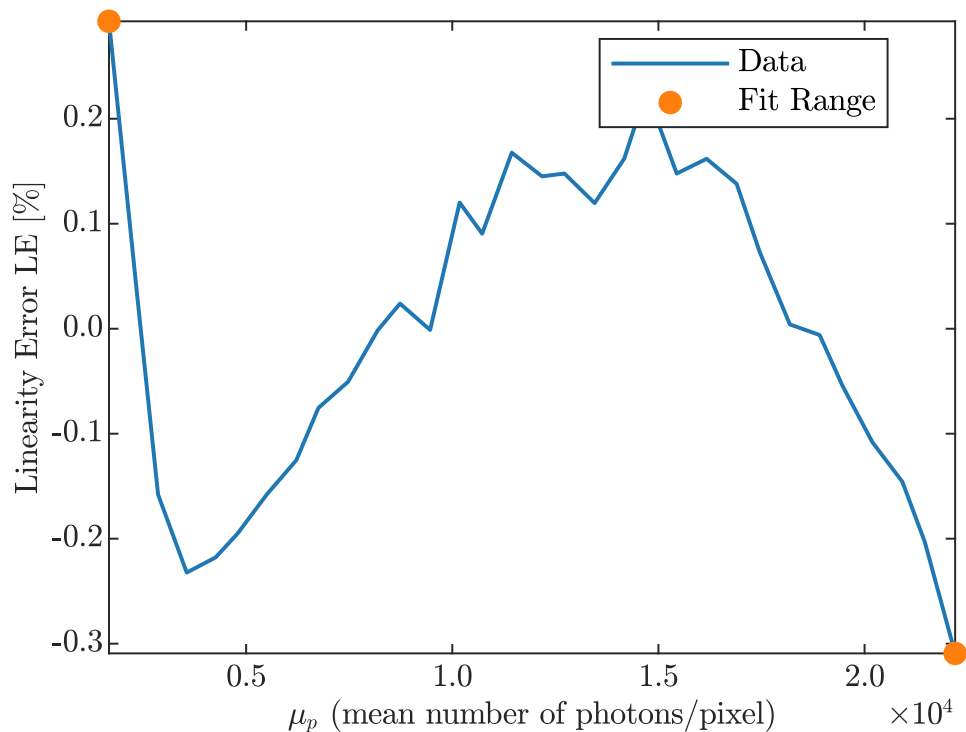
Sensitivity



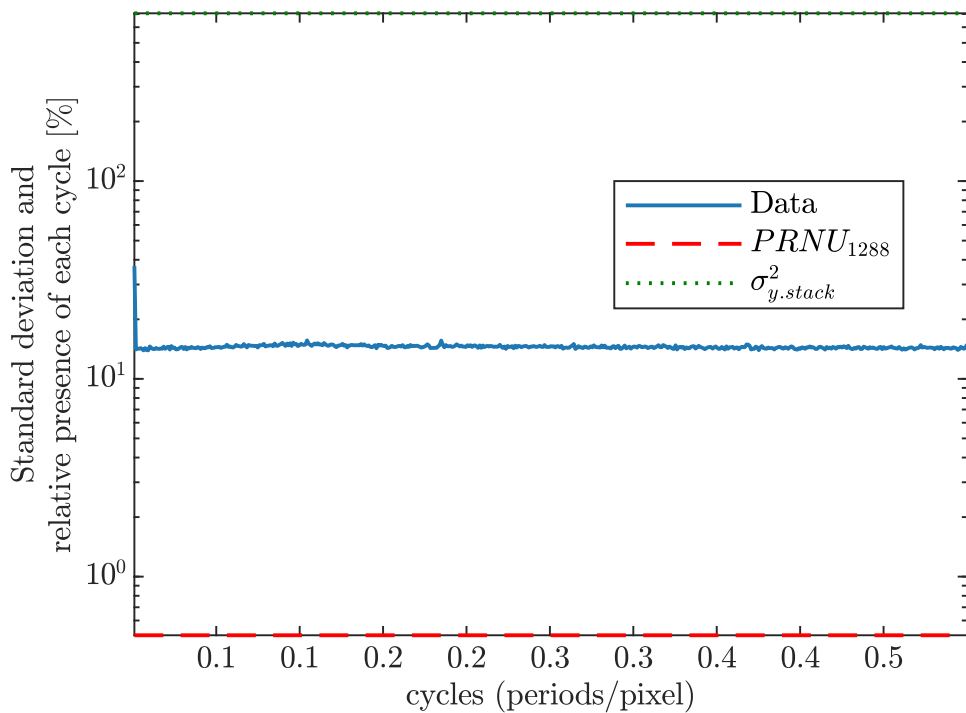
Linearity



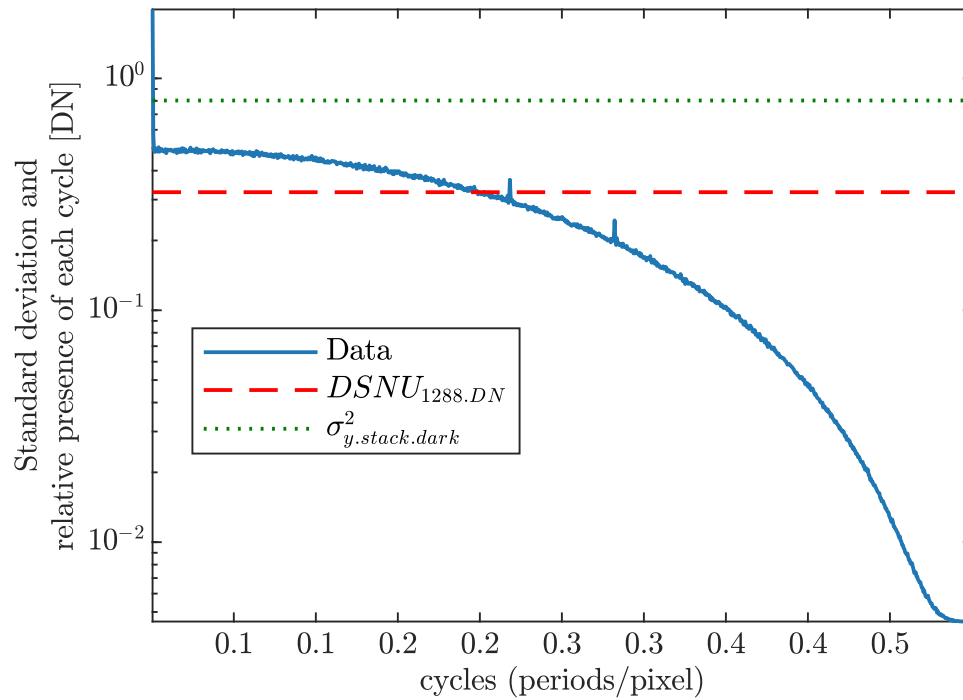
Deviation Linearity



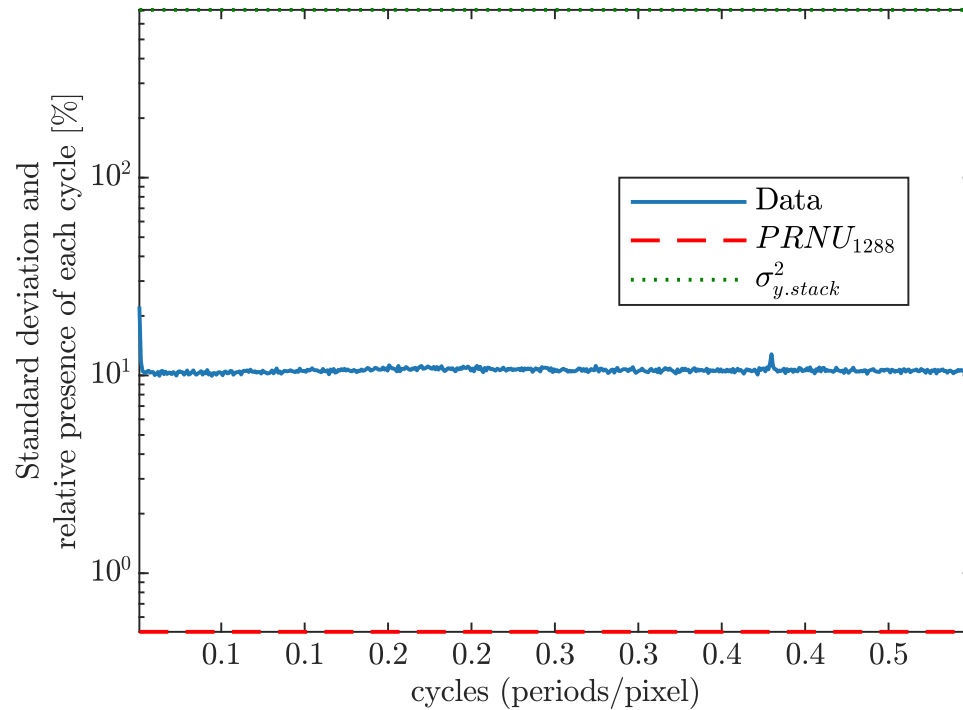
Horizontal Spectrogram PRNU



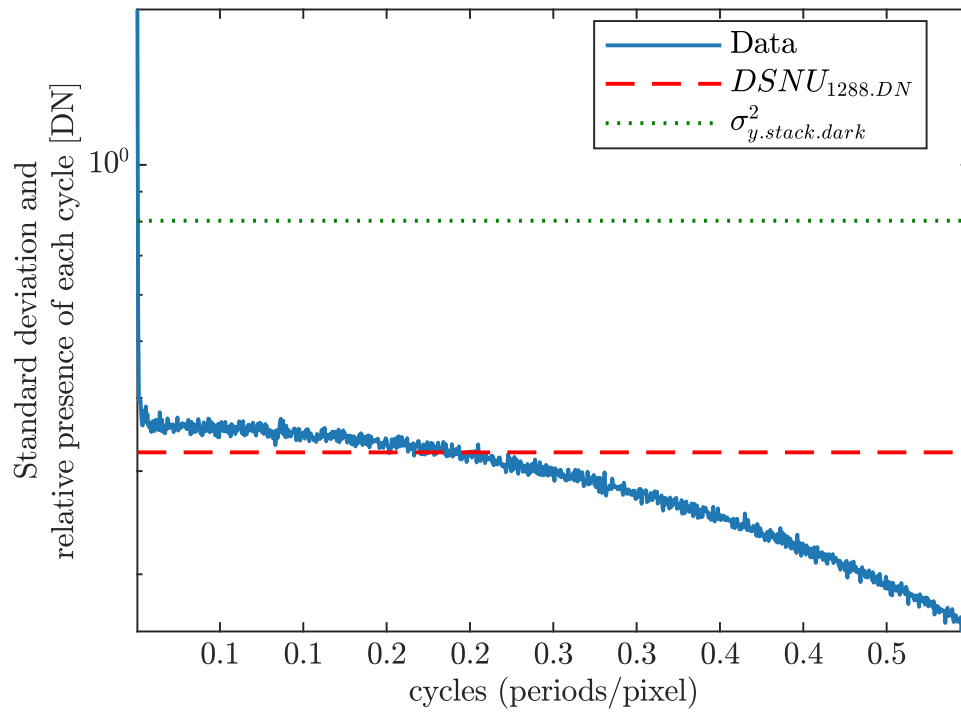
Horizontal Spectrogram DSNU



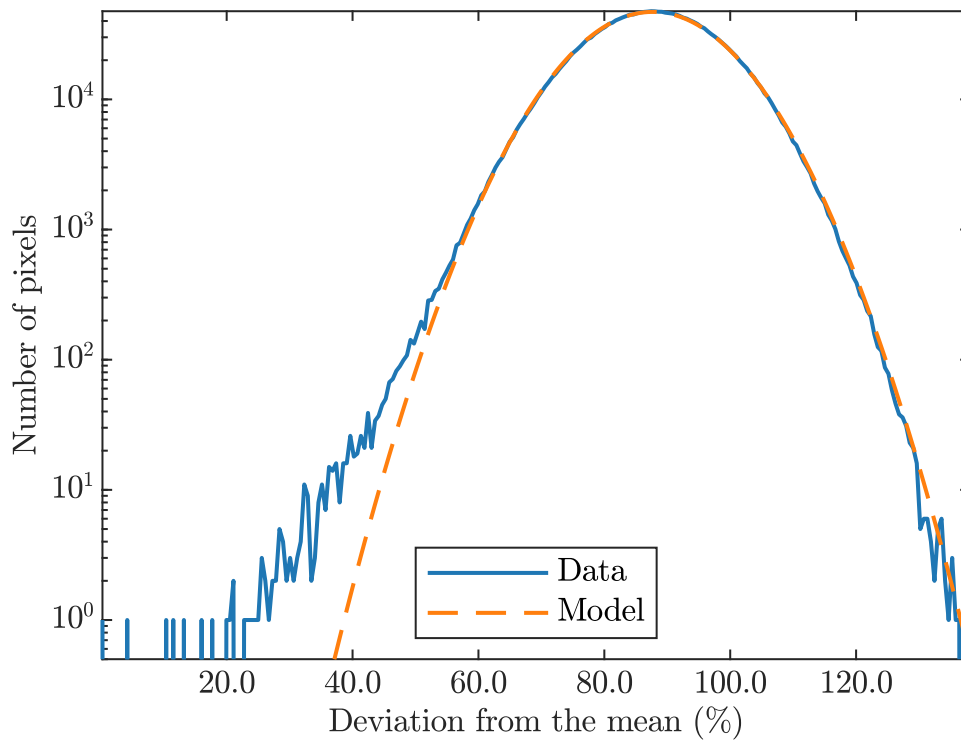
Vertical Spectrogram PRNU



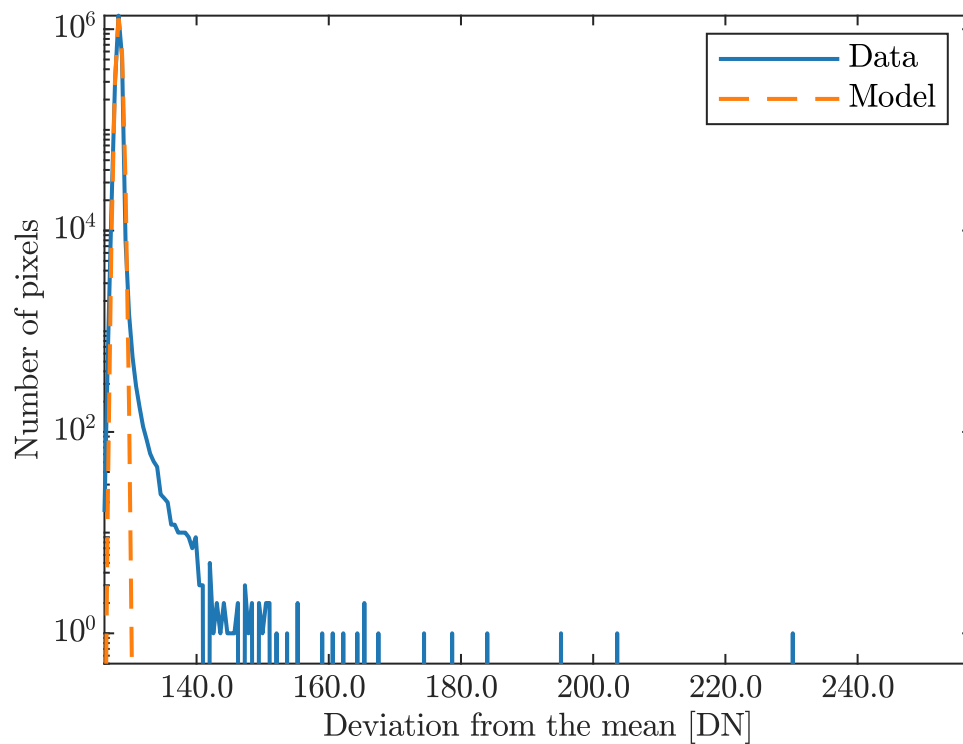
Vertical Spectrogram DSNU



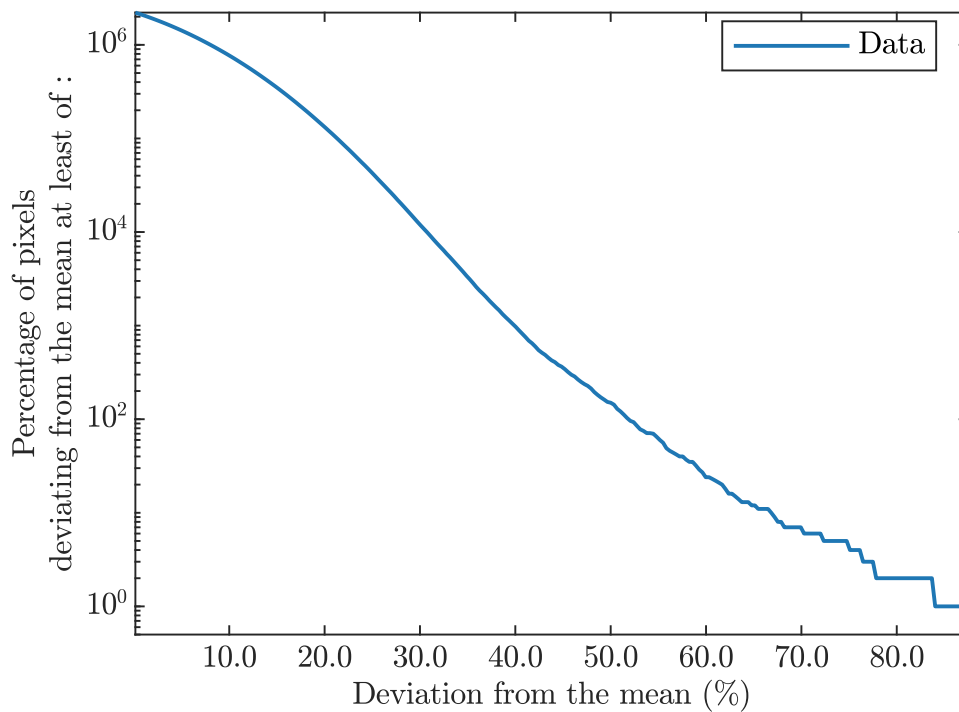
Logarithmic Histogram PRNU



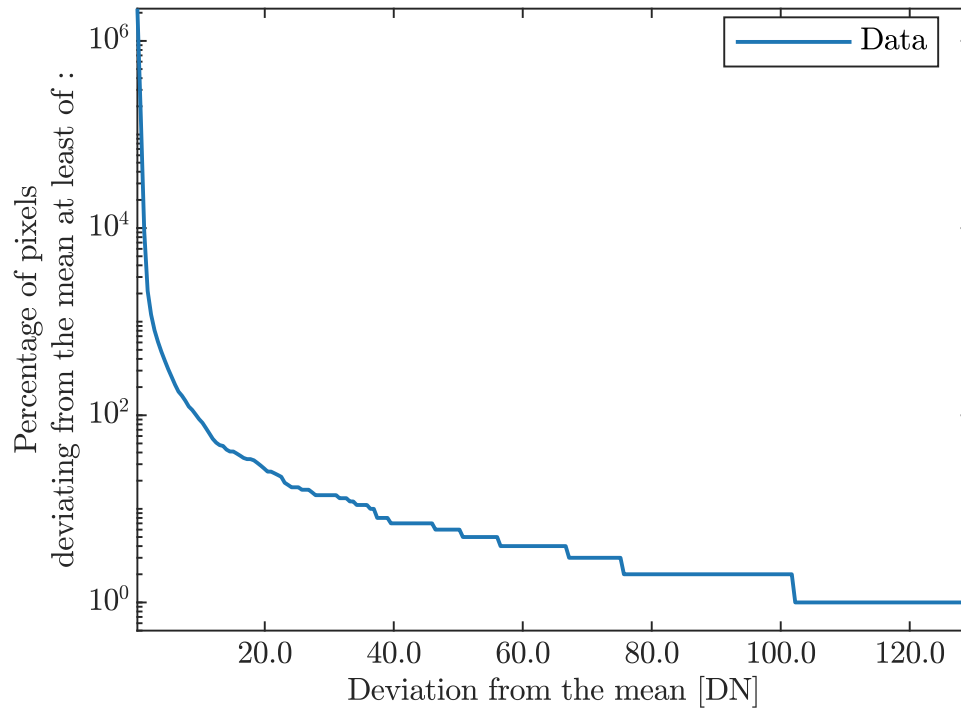
Logarithmic Histogram DSNU



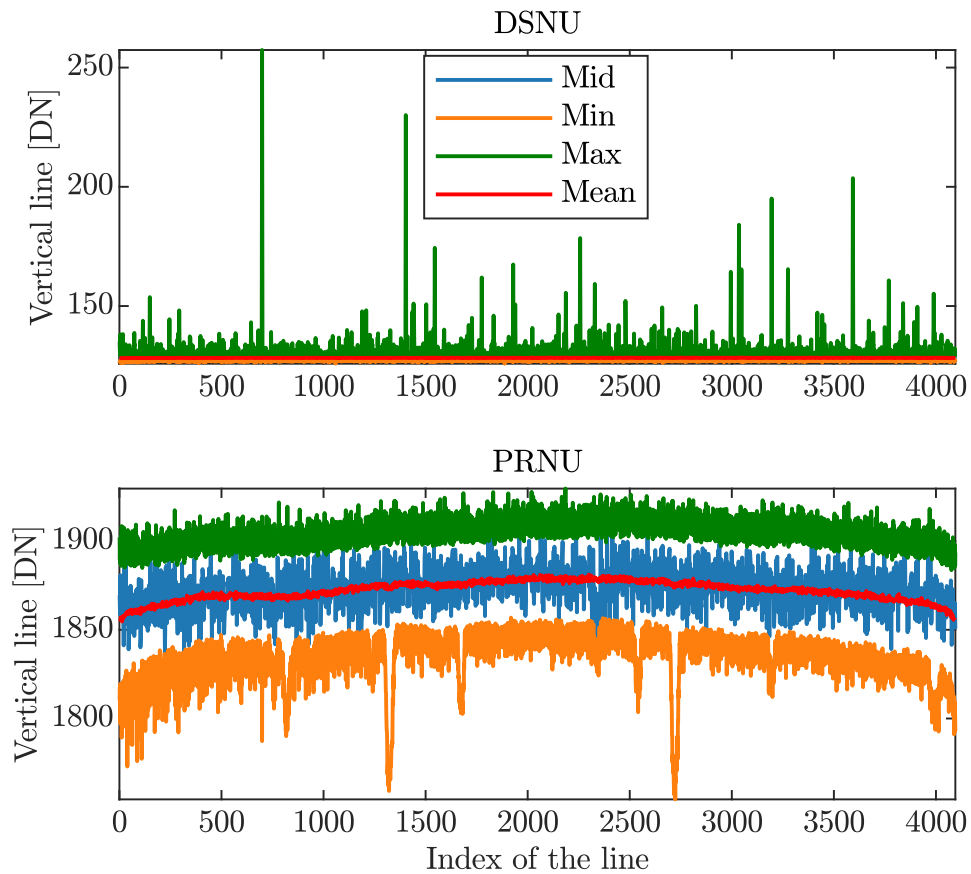
Accumulated Log Histogram PRNU



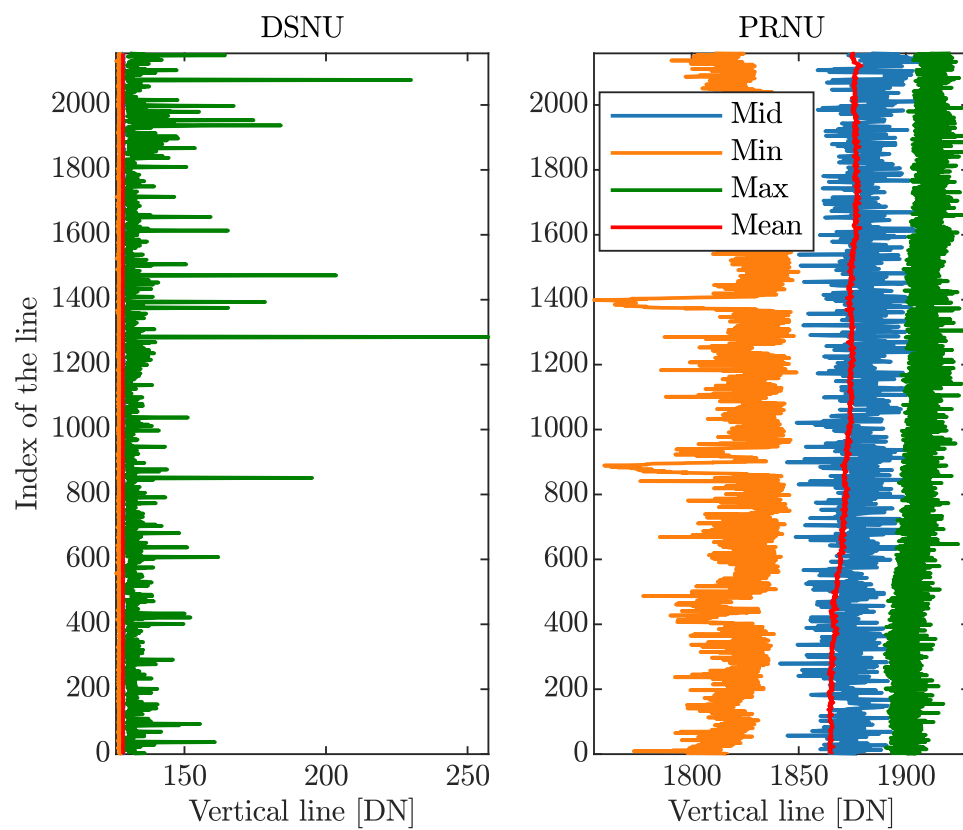
Accumulated Log Histogram DSNU



Horizontal Profile



Vertical Profile



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

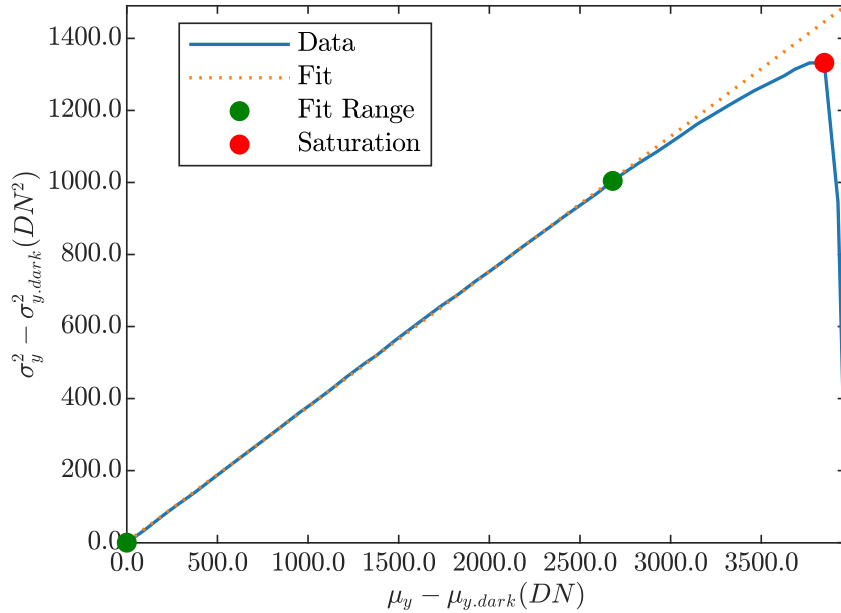
Camera setting

Gain	GainLevelx1
Black level	128

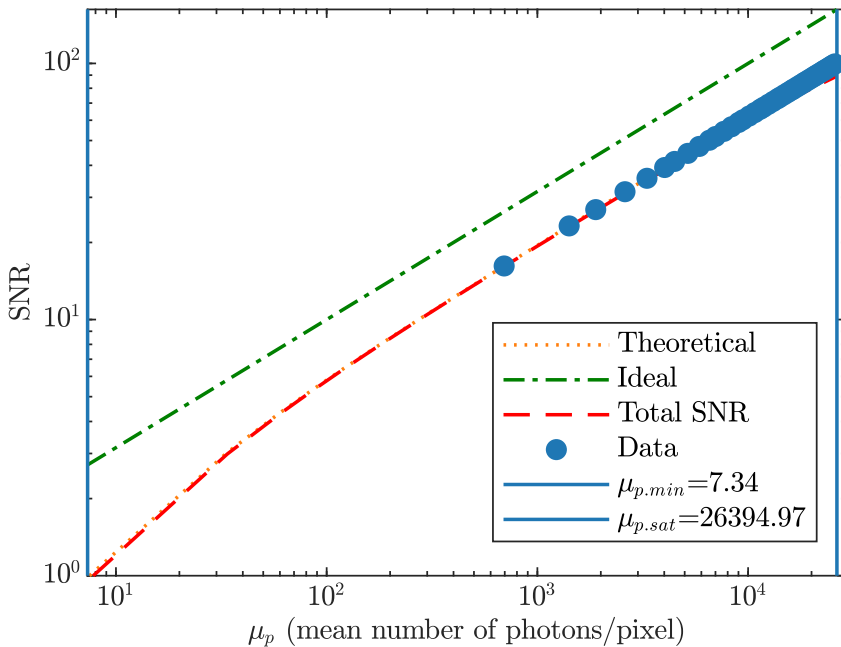
Operation point parameters

Environmental temperature	25.62
Camera body temperature	33.18
Sensor temperature	40.808
Processor temperature	40

Photon Transfer



Signal-to-Noise Ratio



Performance

Quantum efficiency

η	38.4391	%
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System gain

K	0.37903	DN/e ⁻
1/K	2.6383	e ⁻ /DN

Temporal dark noise

σ_d	2.1914	e ⁻
$\sigma_{y,dark}$	0.87935	DN

Signal-to-noise ratio

SNR _{max}	100.7273	
	40.0629	dB
	6.6543	bit
1/SNR _{max}	0.99278	%

Absolute sensitivity threshold

$\mu_{e,min}$	2.82	e ⁻
$\mu_{e,min,area}$	0.23693	e ⁻ /μm ²

Saturation capacity

$\mu_{e,sat}$	10145.9977	e ⁻
$\mu_{e,sat,area}$	852.4258	e ⁻ /μm ²

Dynamic range

DR	3597.8545	
	71.1209	dB
	11.8129	bit

Spatial nonuniformities

DSNU ₁₂₈₈	0.72334	e ⁻
DSNU _{1288,col}	0.123	e ⁻
DSNU _{1288,row}	0.094493	e ⁻
DSNU _{1288,pix}	0.70652	e ⁻
PRNU ₁₂₈₈	0.52059	%
PRNU _{1288,col}	0.044456	%
PRNU _{1288,row}	0.017909	%
PRNU _{1288,pix}	0.51838	%

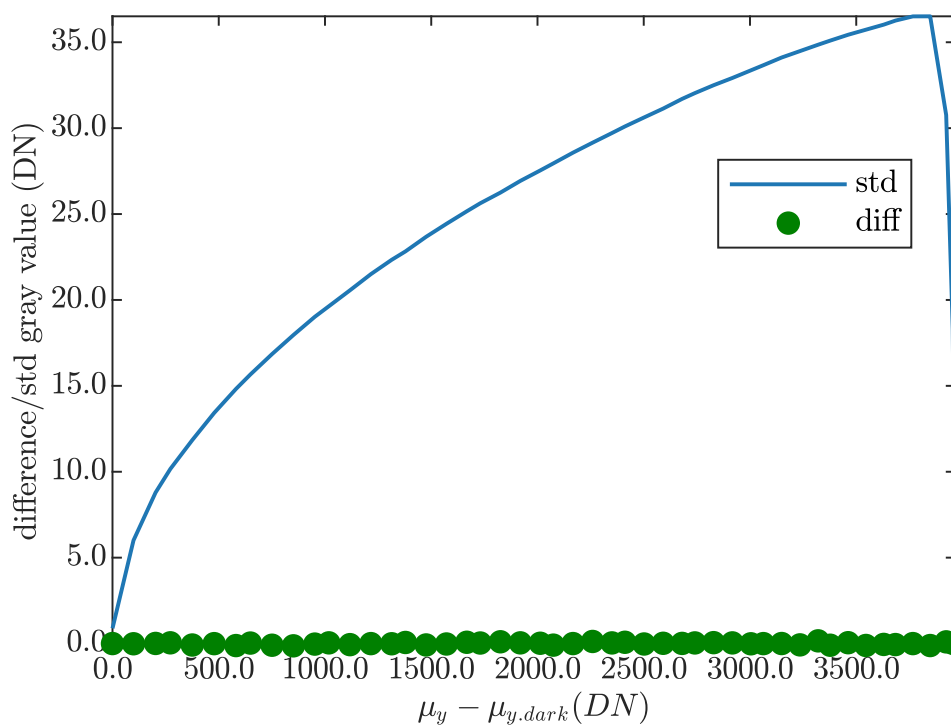
Linearity error

LE	0.00052092	%
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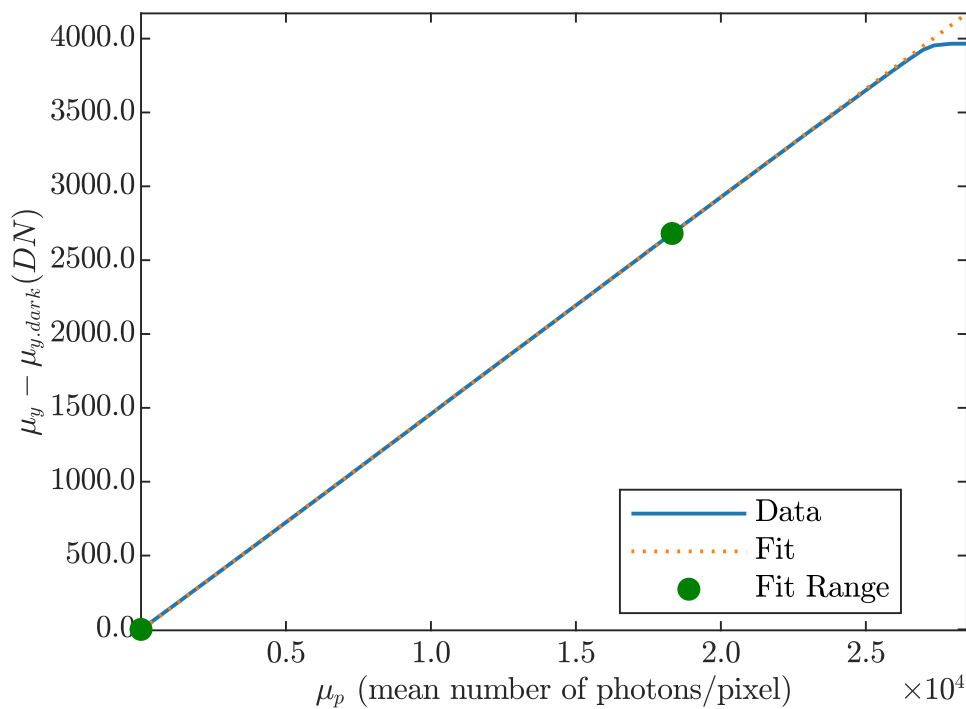
Dark current

$\mu_{l,mean}$	14.4005	e ⁻ /s
$\mu_{l,var}$	3.4223	e ⁻ /s

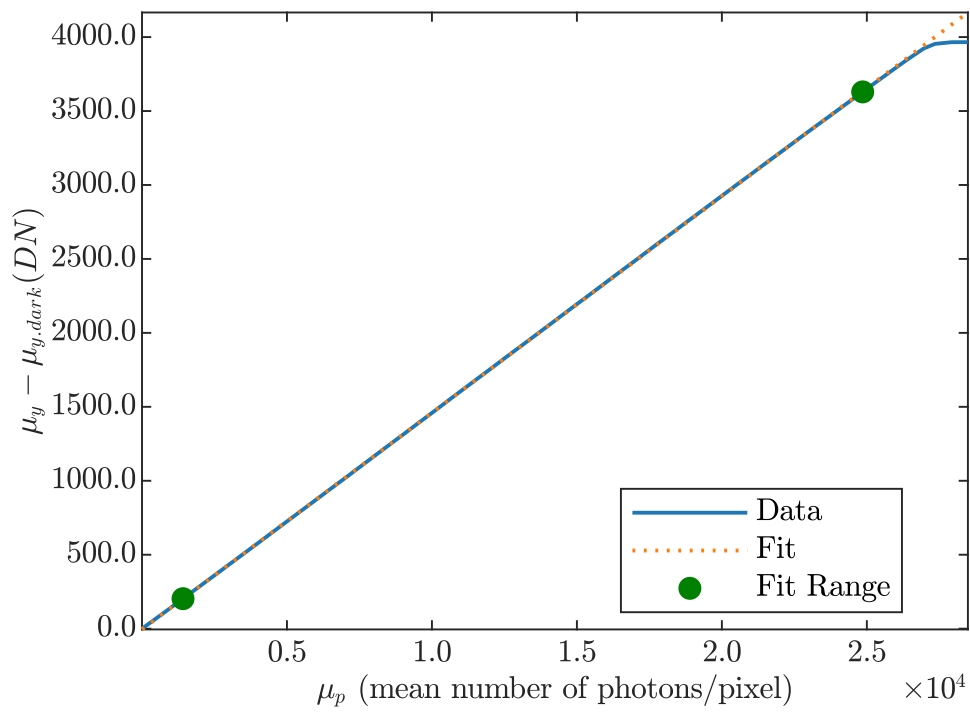
Stability check



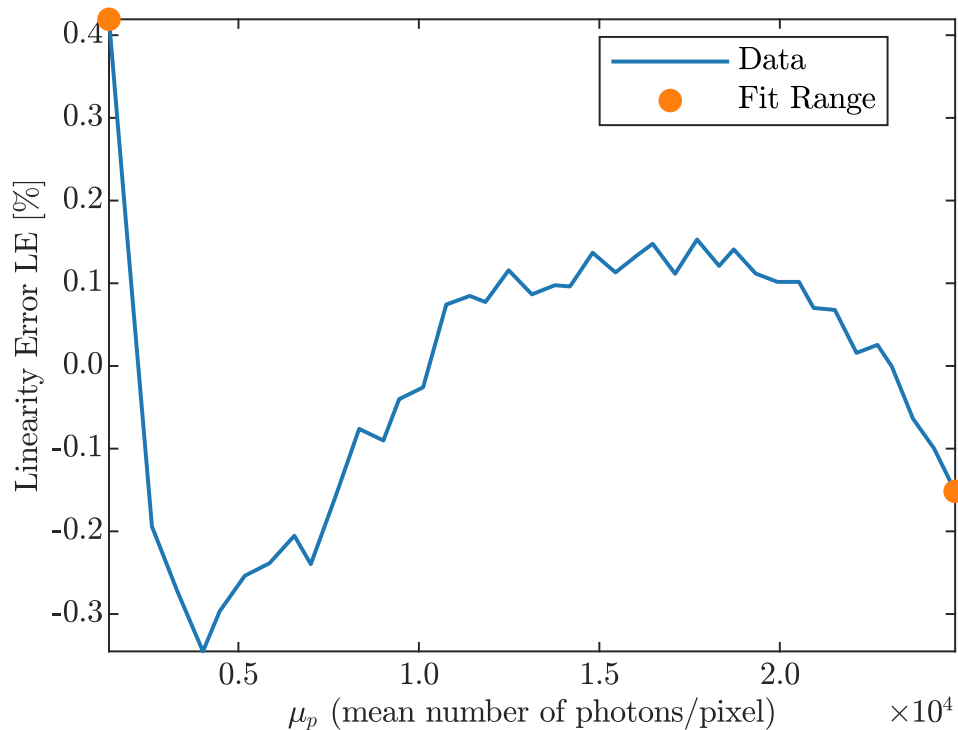
Sensitivity



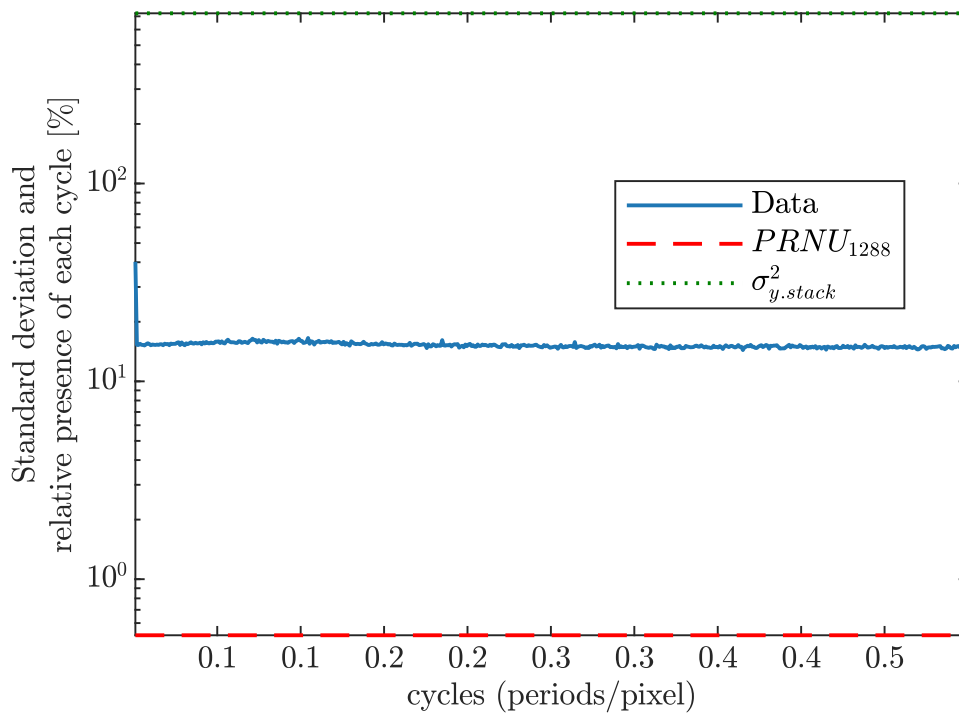
Linearity



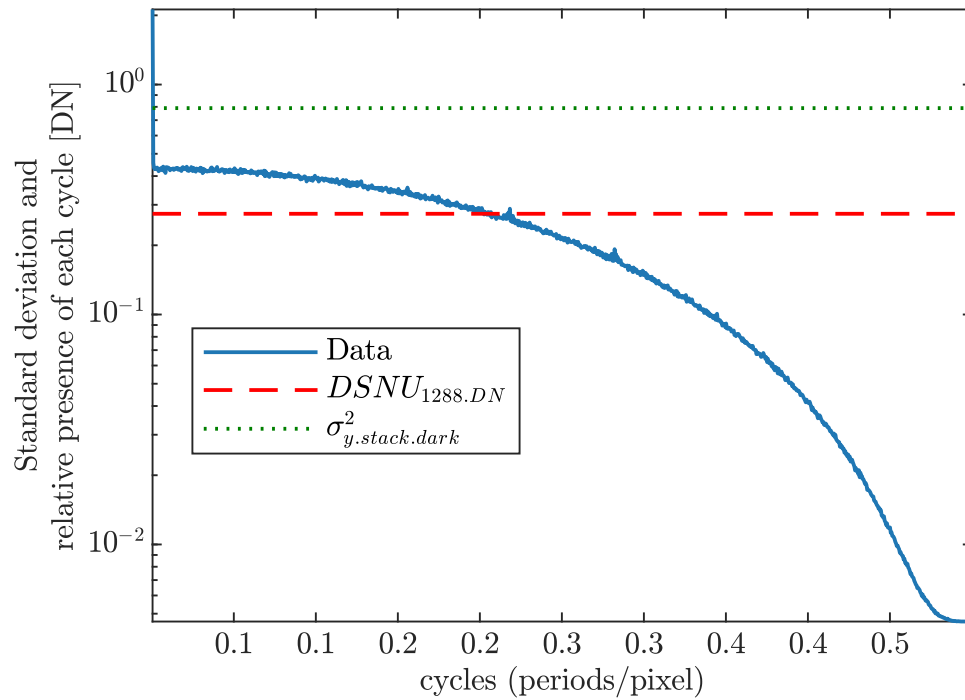
Deviation Linearity



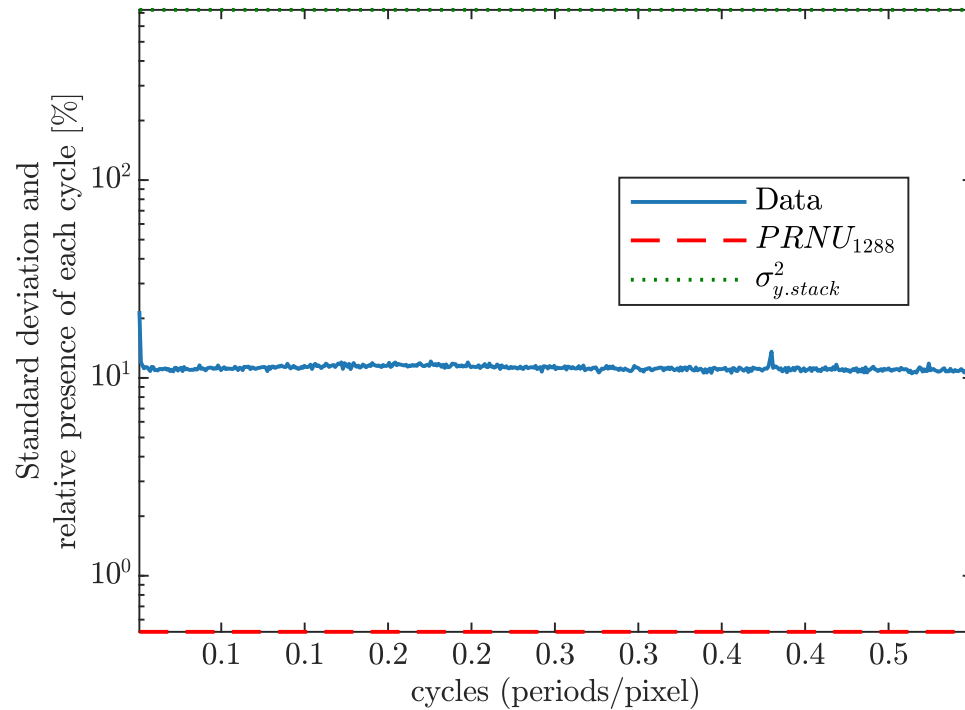
Horizontal Spectrogram PRNU



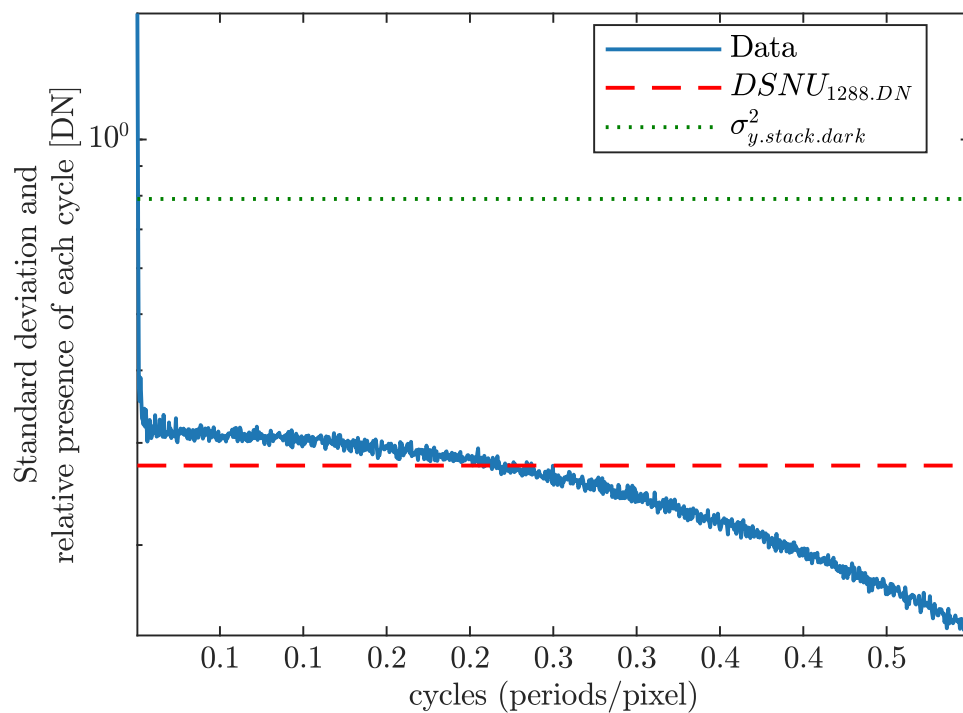
Horizontal Spectrogram DSNU



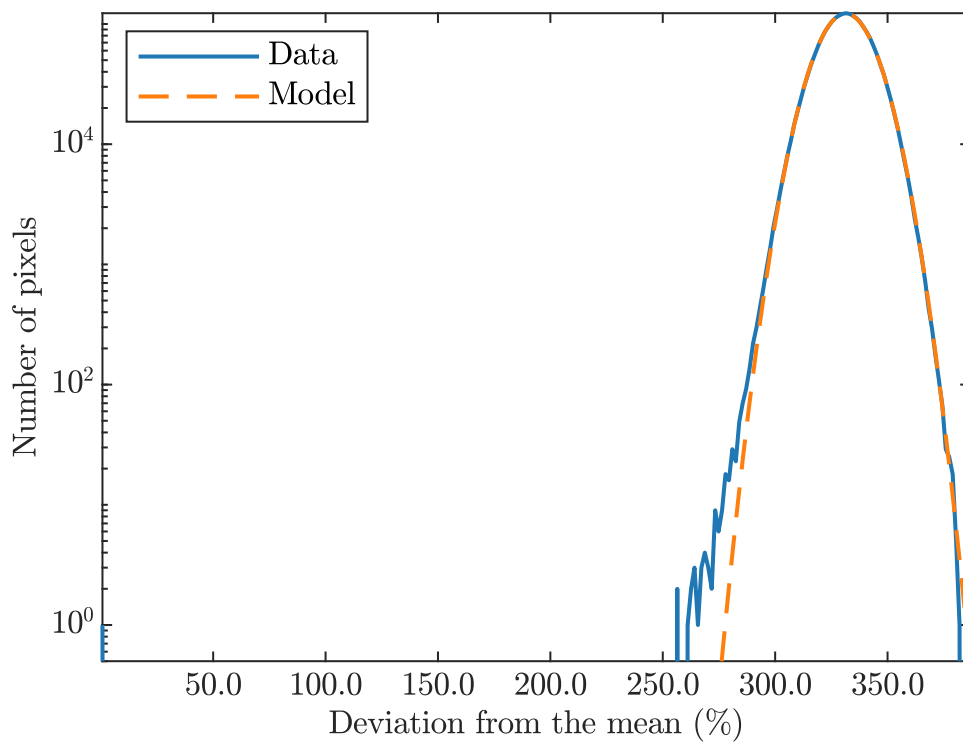
Vertical Spectrogram PRNU



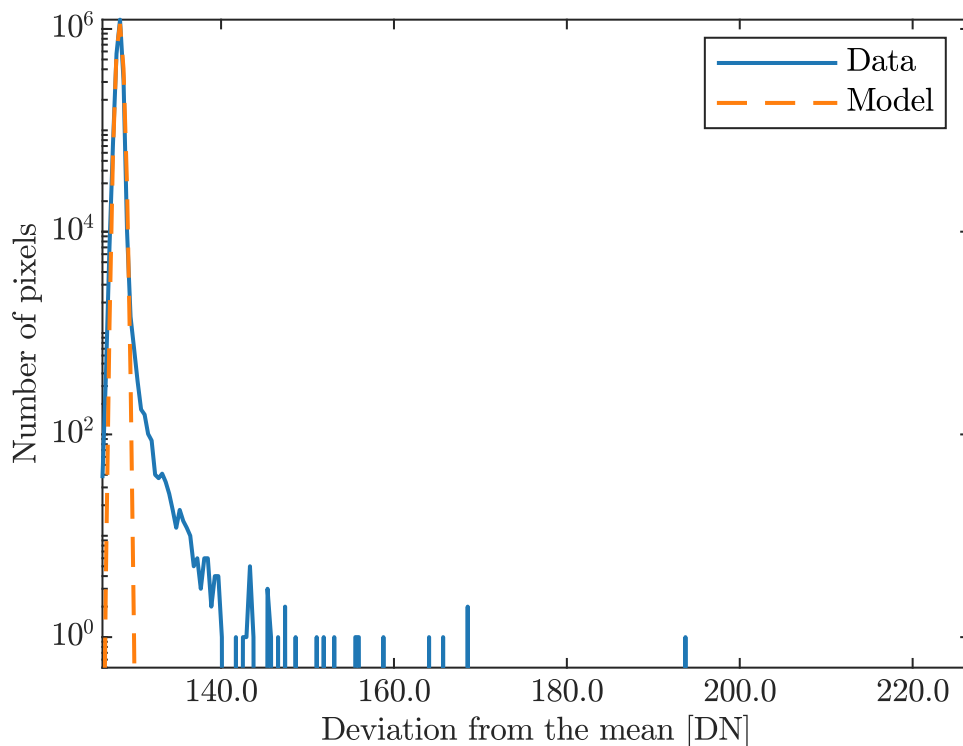
Vertical Spectrogram DSNU



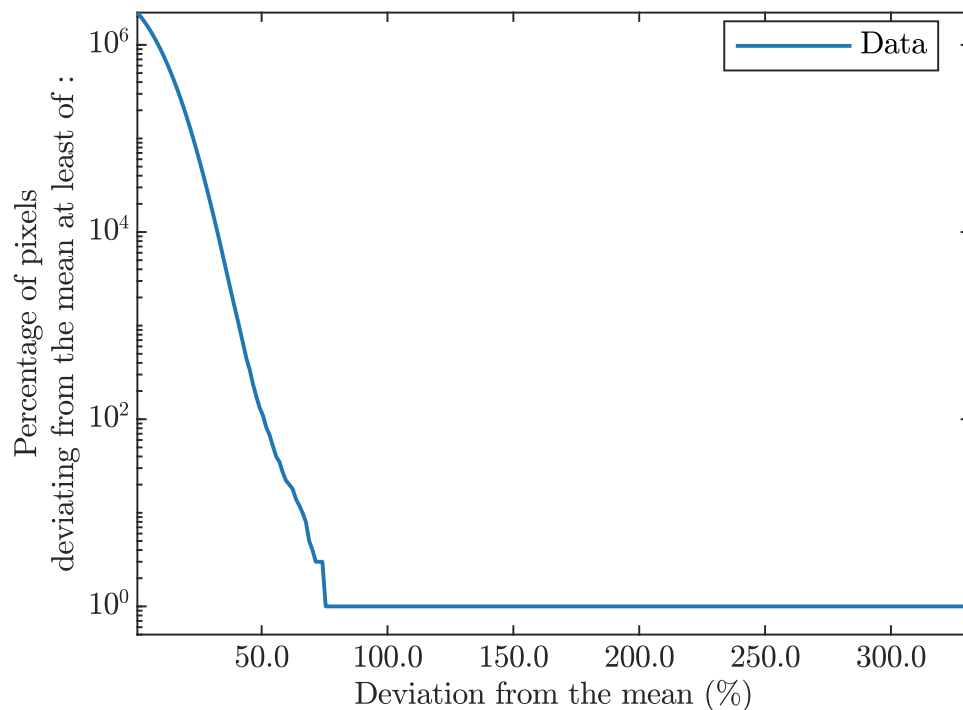
Logarithmic Histogram PRNU



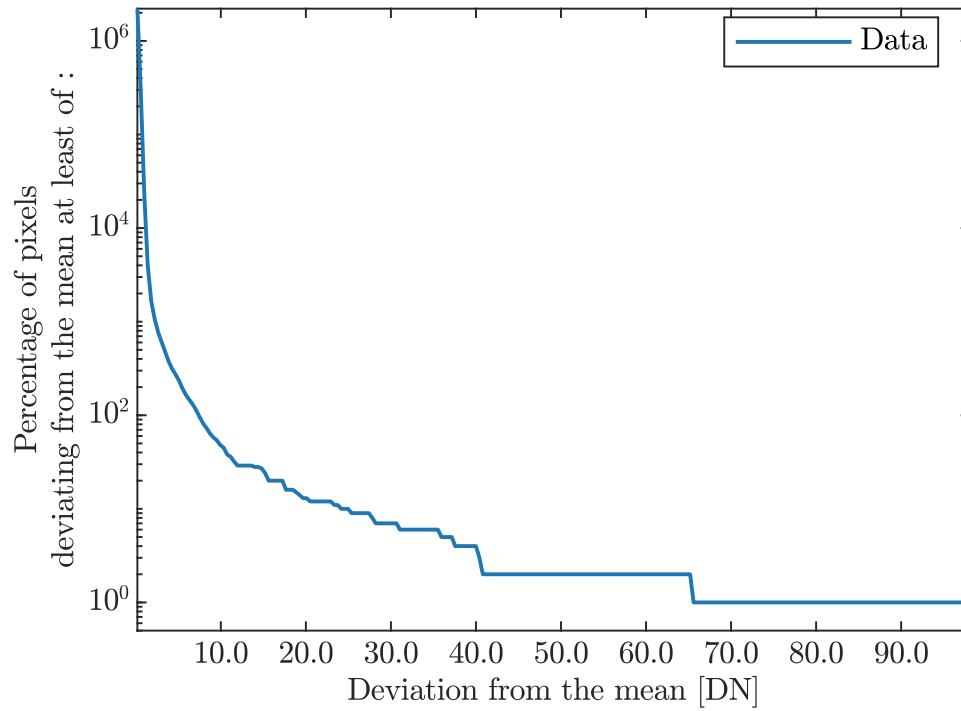
Logarithmic Histogram DSNU



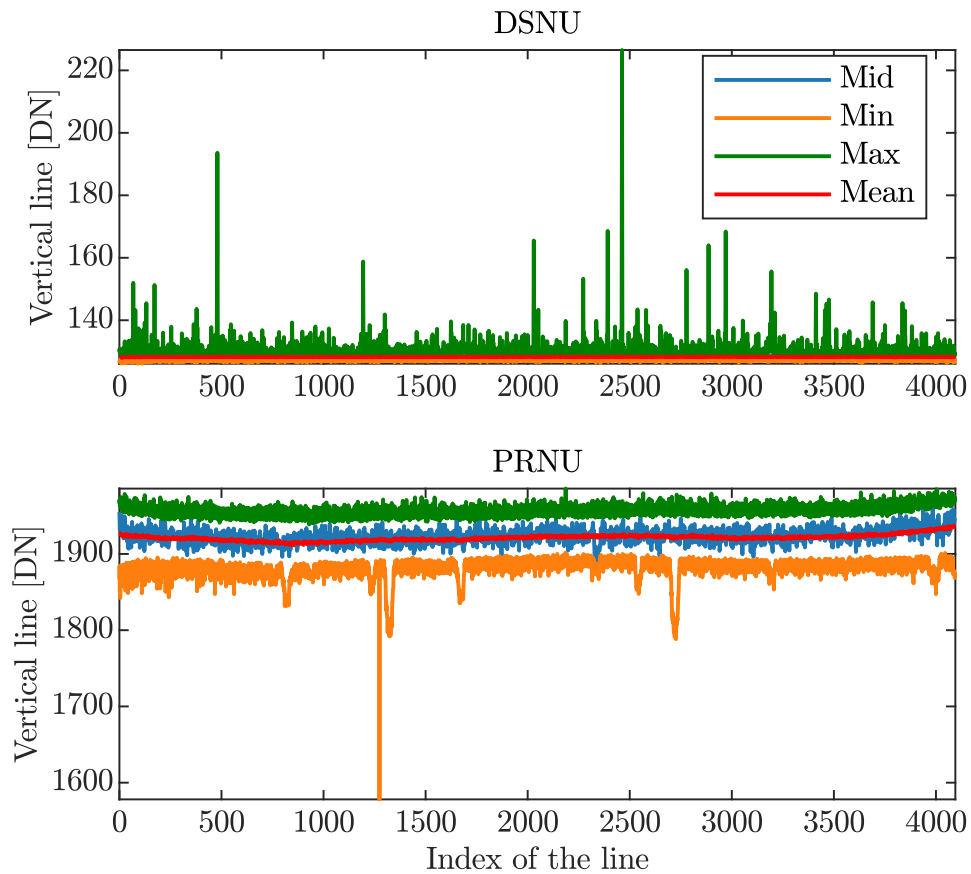
Accumulated Log Histogram PRNU



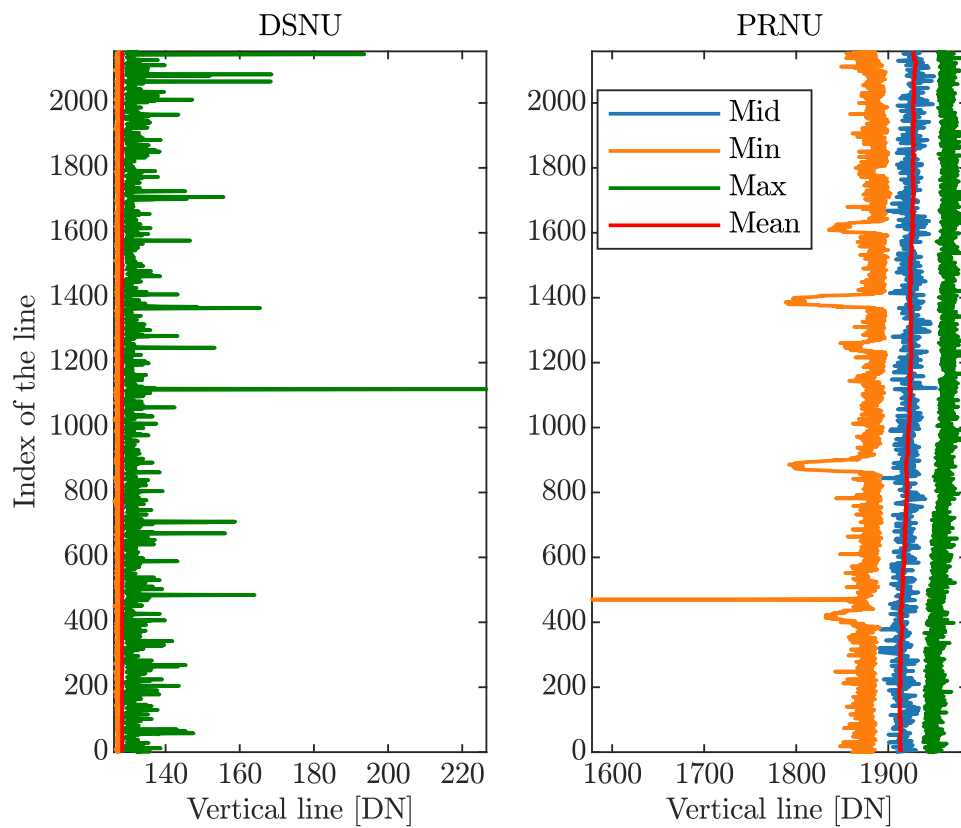
Accumulated Log Histogram DSNU



Horizontal Profile

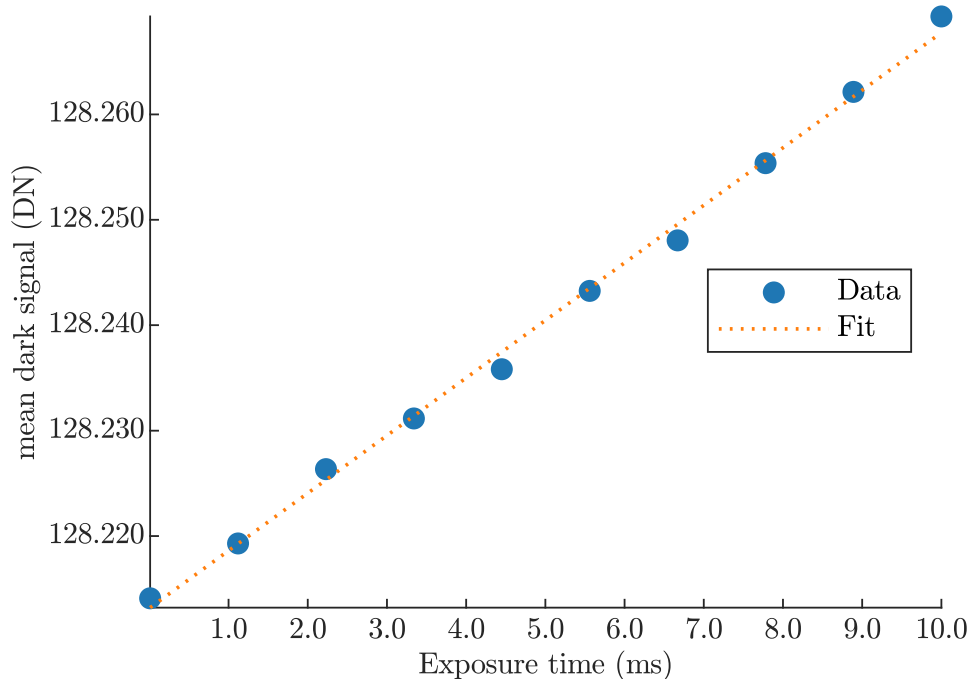


Vertical Profile

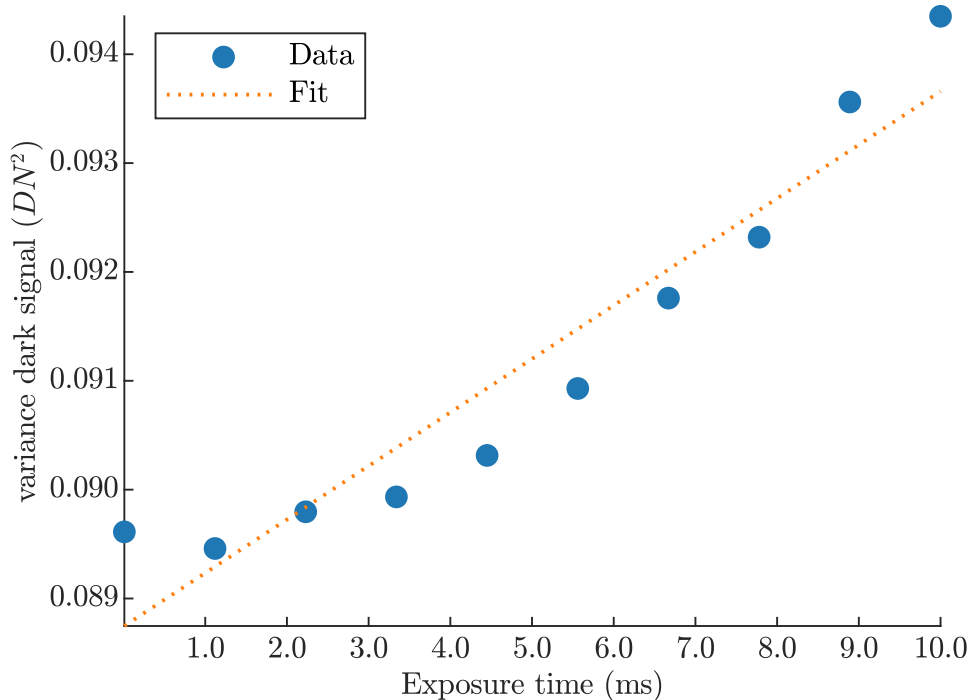


Dark Current

Dark Current from Mean



Dark Current from Variance



International Distributor

sky blue
microsystems

Sky Blue Microsystems GmbH
Geisenhausenerstr. 18
81379 Munich, Germany
+49 89 780 2970, info@skyblue.de
www.skyblue.de