

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	18.1mm
Model	Iron0505-C	Sensor	GMAX0505
Camera type	Color	Sensor type	CMOS
Date	11-Apr-2022 14:01:12	Shutter type	Global
Data type	Single	Overlap capabilities	Overlapping
Sensor type	CMOS	Frame rate	40 Hz
Lens category	C-Mount	Exposure control	by irradiance
Resolution	5120 x 5120 ,12 bits	Exposure time	12000 μ s
Pixel size	2.5 μ m x 2.5 μ m	Illumination	Variable with constant exposure time
Maximum readout rate	42 fps	Irradiation Steps	50
Dark current compensation	No	Irradiation calibration accuracy	-
Interface type	CXP-12	Irradiation measurement error	-
Serial number	123456	Standart version	4.0 Linear
Firmware version	1.0.2-2022.4.3	Light source	Integrating Sphere

International Distributor



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www.skyblue.de

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

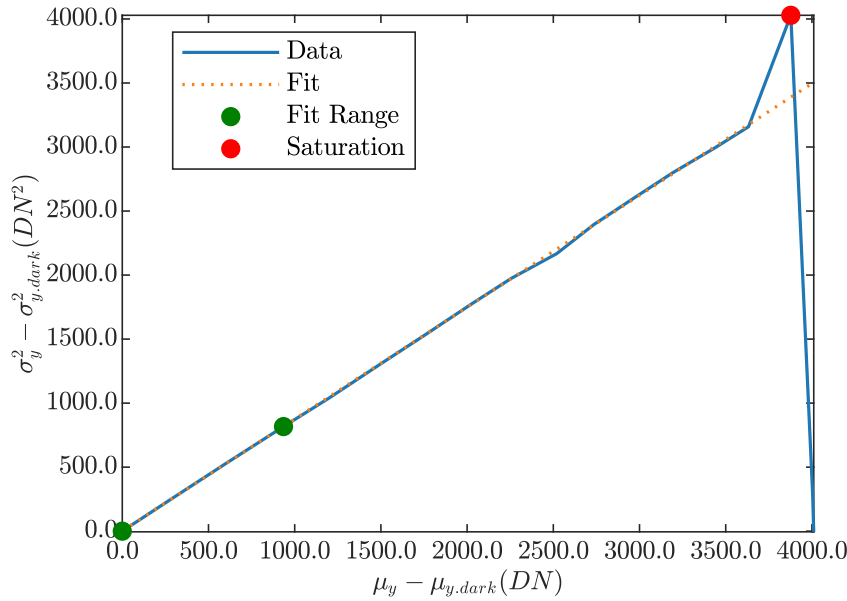
Camera setting

Gain	2.5
Black level	-1032

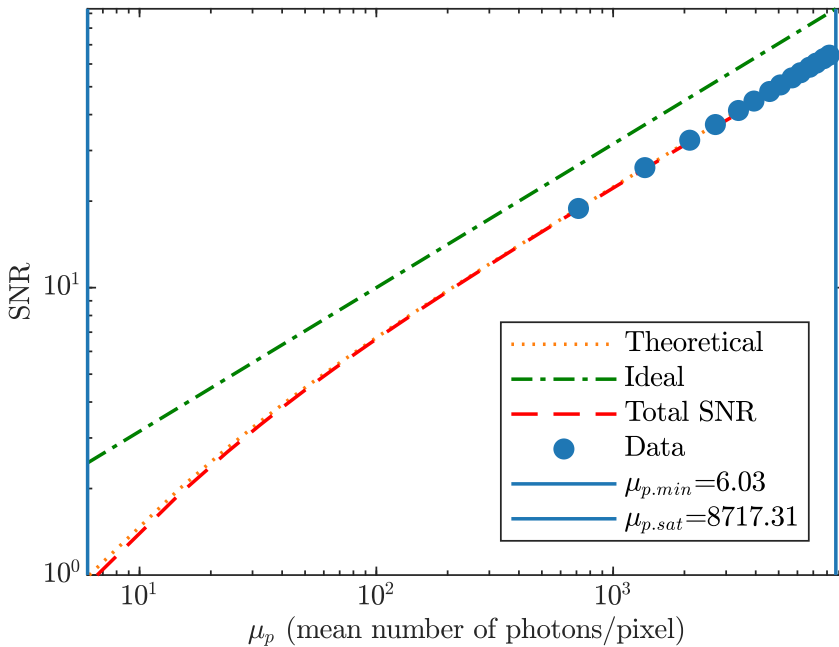
Operation point parameters

Environmental temperature	22.81
Camera body temperature	22.81
Sensor temperature	53.947
Processor temperature	63

Photon Transfer



Signal-to-Noise Ratio



Performance

Quantum efficiency

η	50.734	%
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System gain

K	0.87358	DN/e ⁻
1/K	1.1447	e ⁻ /DN

Temporal dark noise

σ_d	2.5401	e ⁻
$\sigma_{y,dark}$	2.2376	DN

Signal-to-noise ratio

SNR _{max}	66.5029	
	36.4568	dB
	6.0553	bit
1/SNR _{max}	1.5037	%

Absolute sensitivity threshold

$\mu_{e,min}$	3.0615	e ⁻
$\mu_{e,min,area}$	0.48984	e ⁻ /μm ²

Saturation capacity

$\mu_{e,sat}$	4422.6388	e ⁻
$\mu_{e,sat,area}$	707.6222	e ⁻ /μm ²

Dynamic range

DR	1444.6103	
	63.195	dB
	10.4965	bit

Spatial nonuniformities

DSNU ₁₂₈₈	1.1284	e ⁻
DSNU _{1288,col}	0.43015	e ⁻
DSNU _{1288,row}	0.33606	e ⁻
DSNU _{1288,pix}	0.98757	e ⁻
PRNU ₁₂₈₈	0.50675	%
PRNU _{1288,col}	0.15926	%
PRNU _{1288,row}	0.010278	%
PRNU _{1288,pix}	0.48096	%

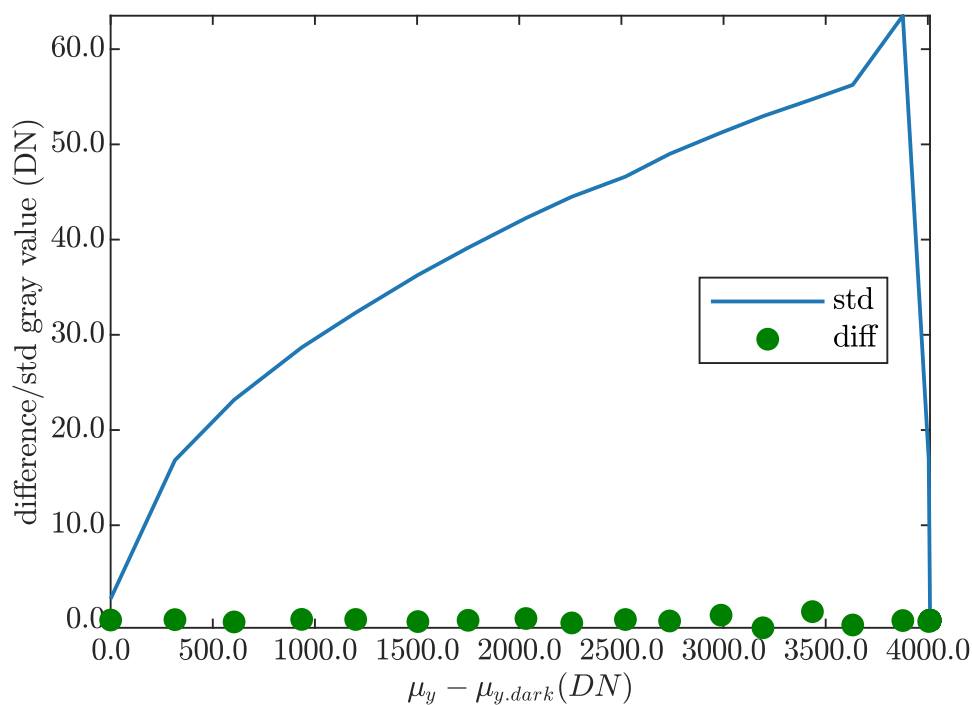
Linearity error

LE	0.00075822	%
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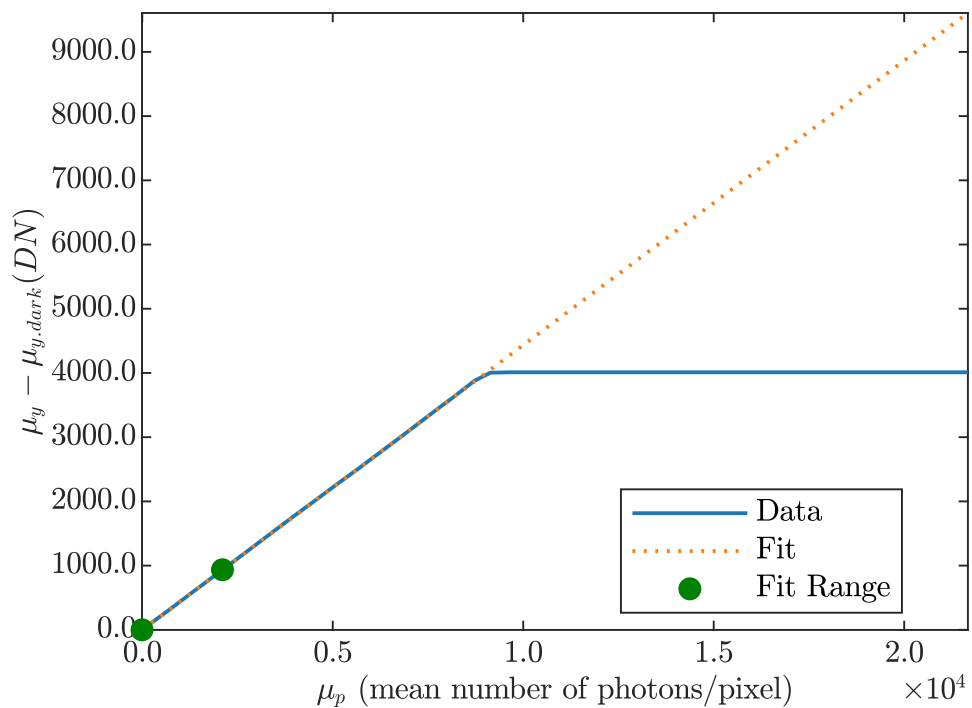
Dark current

$\mu_{l,mean}$	NaN	e ⁻ /s
$\mu_{l,var}$	2.7964	e ⁻ /s

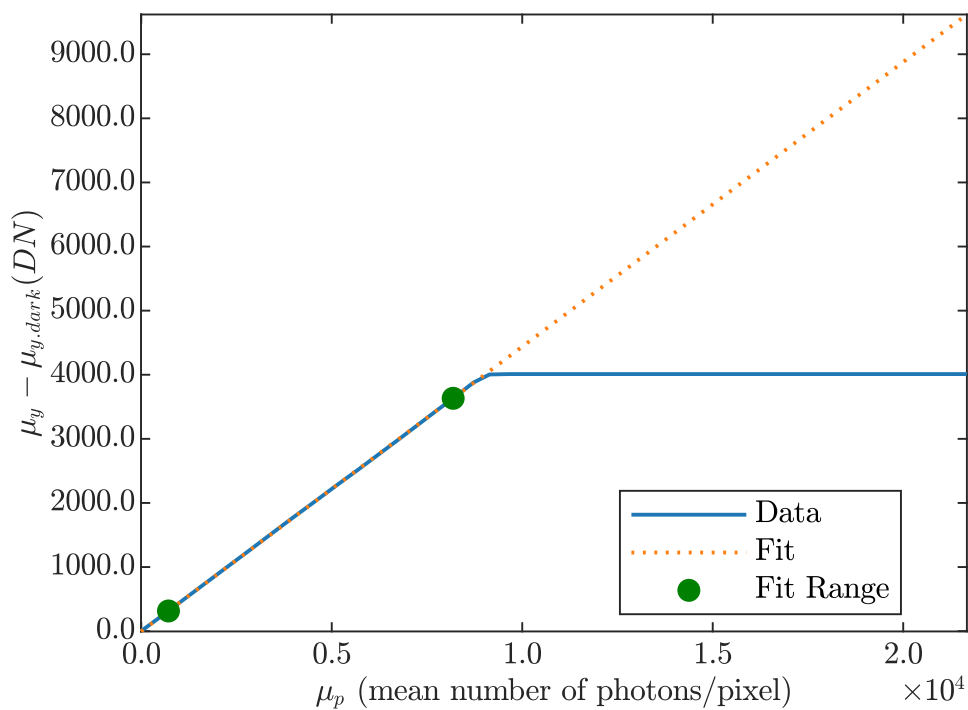
Stability check



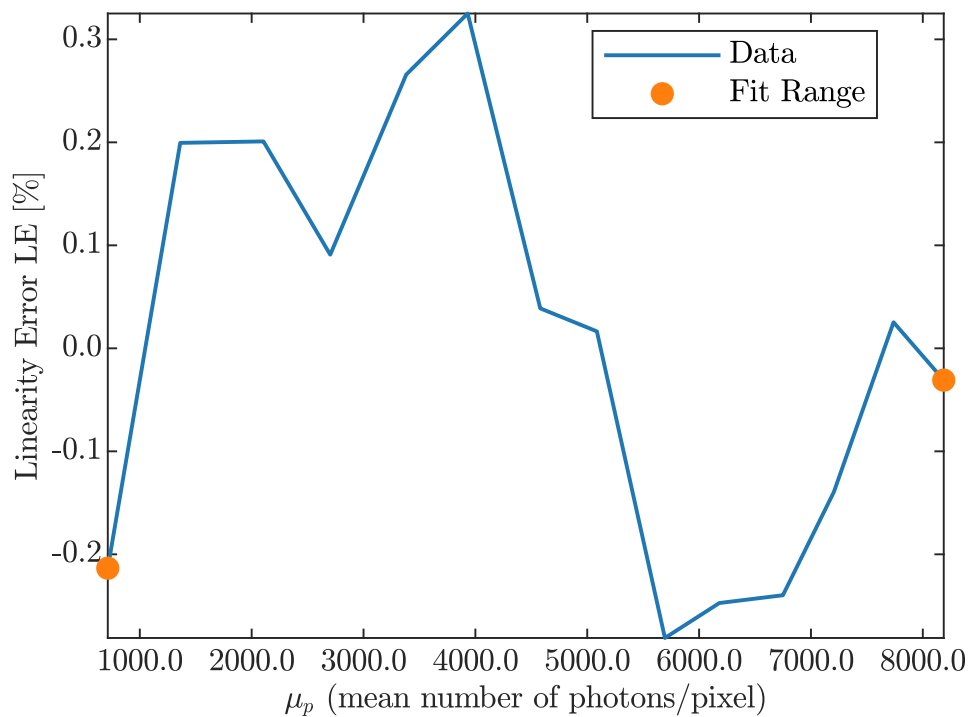
Sensitivity



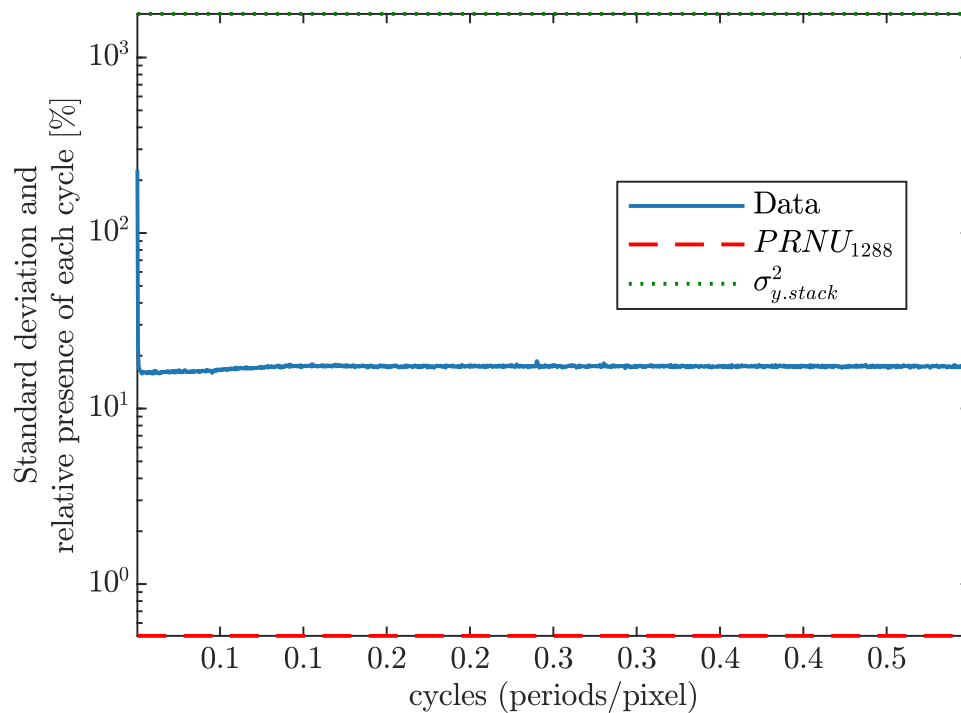
Linearity



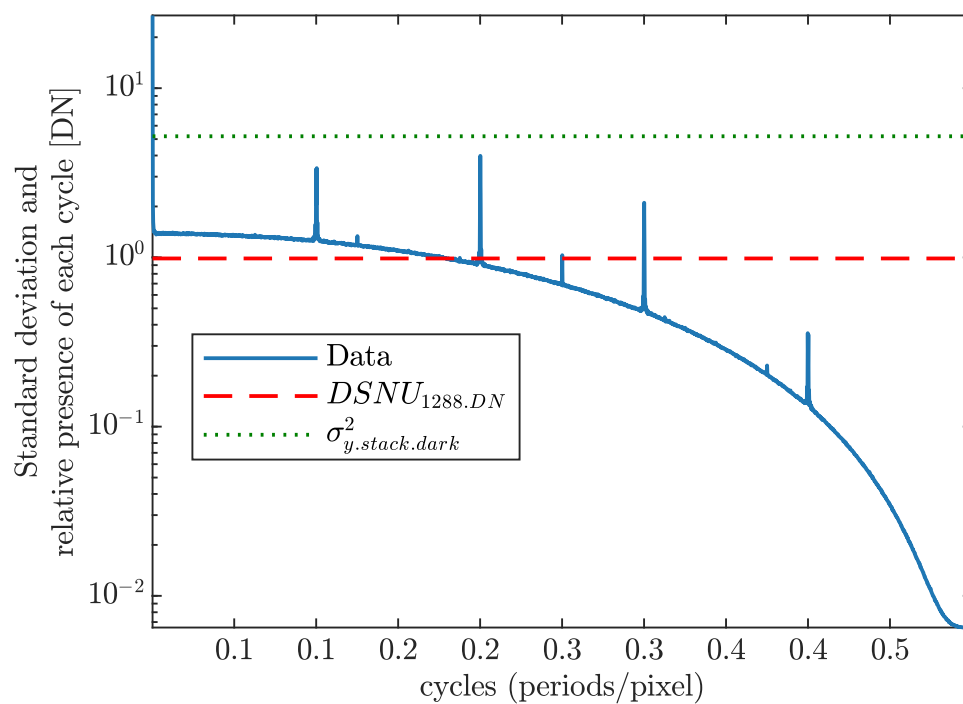
Deviation Linearity



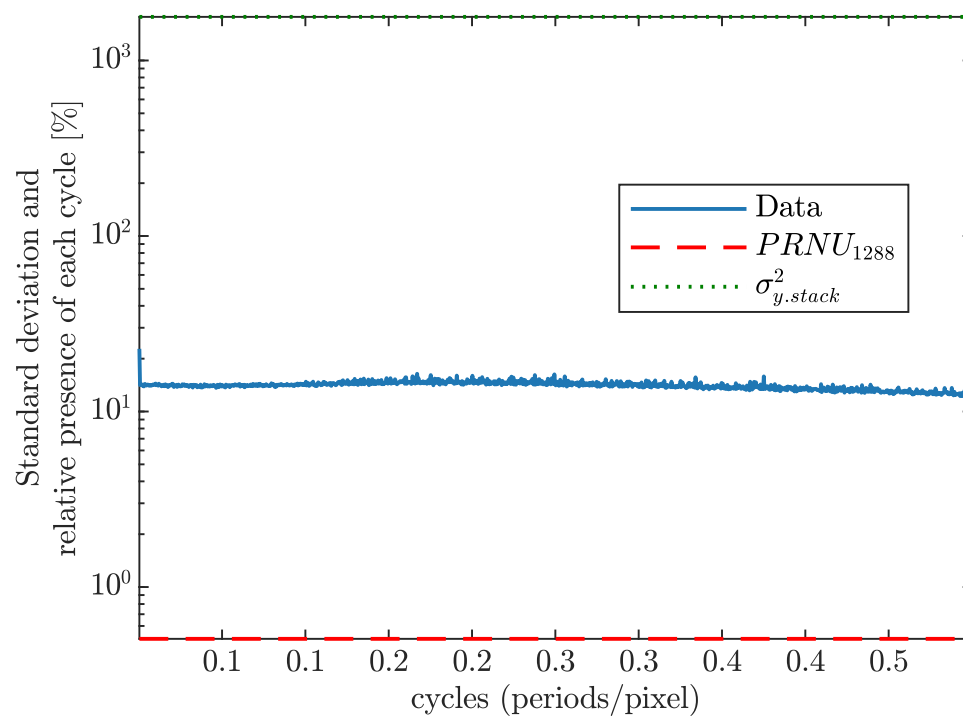
Horizontal Spectrogram PRNU



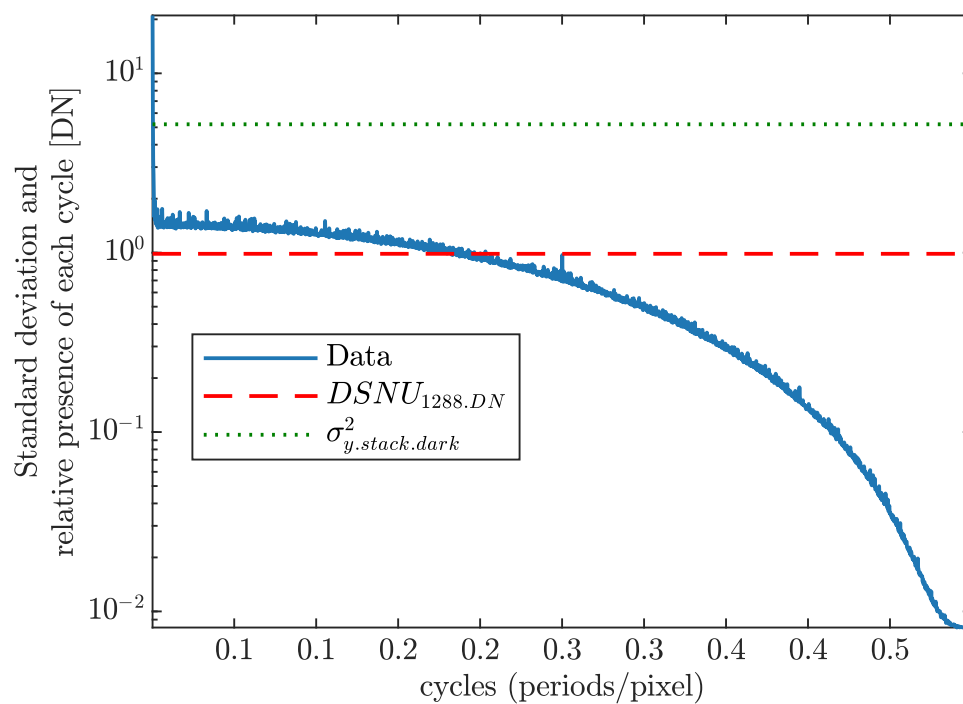
Horizontal Spectrogram DSNU



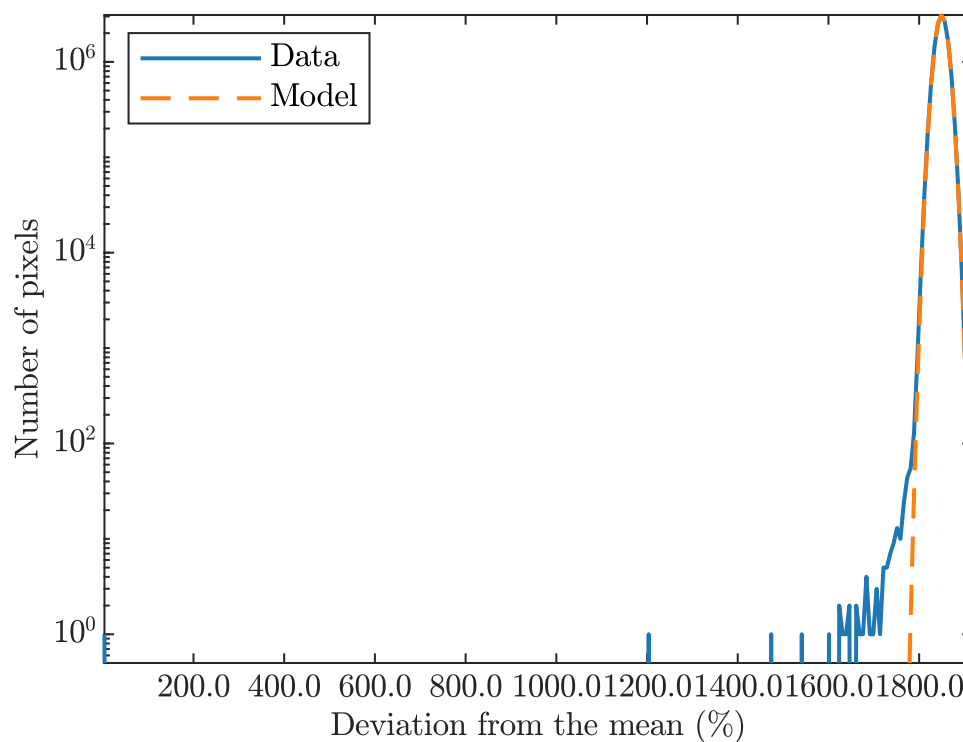
Vertical Spectrogram PRNU



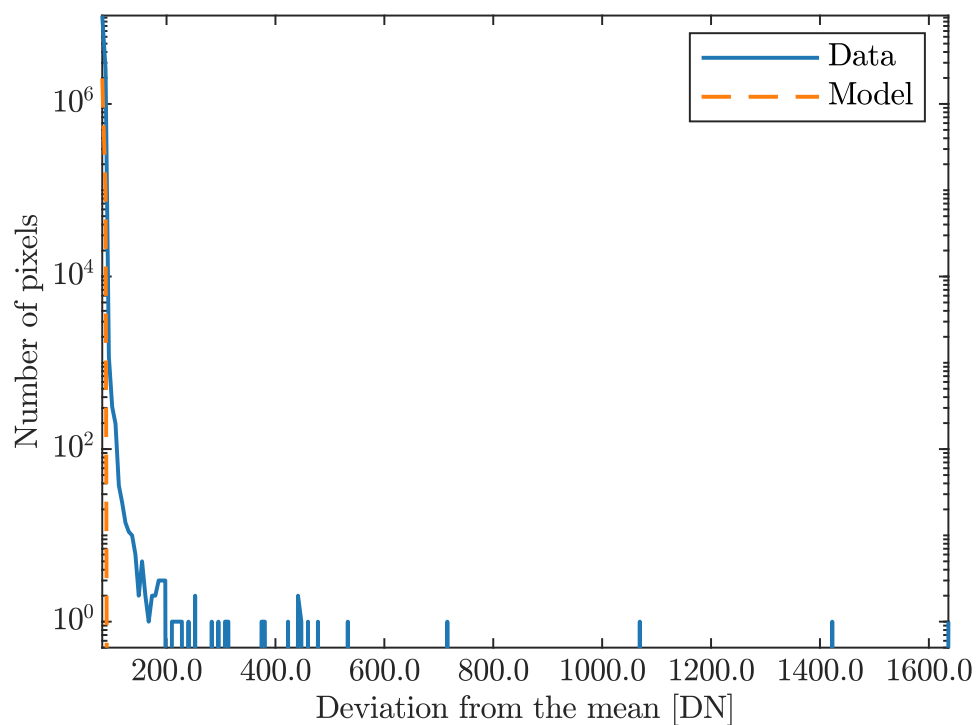
Vertical Spectrogram DSNU



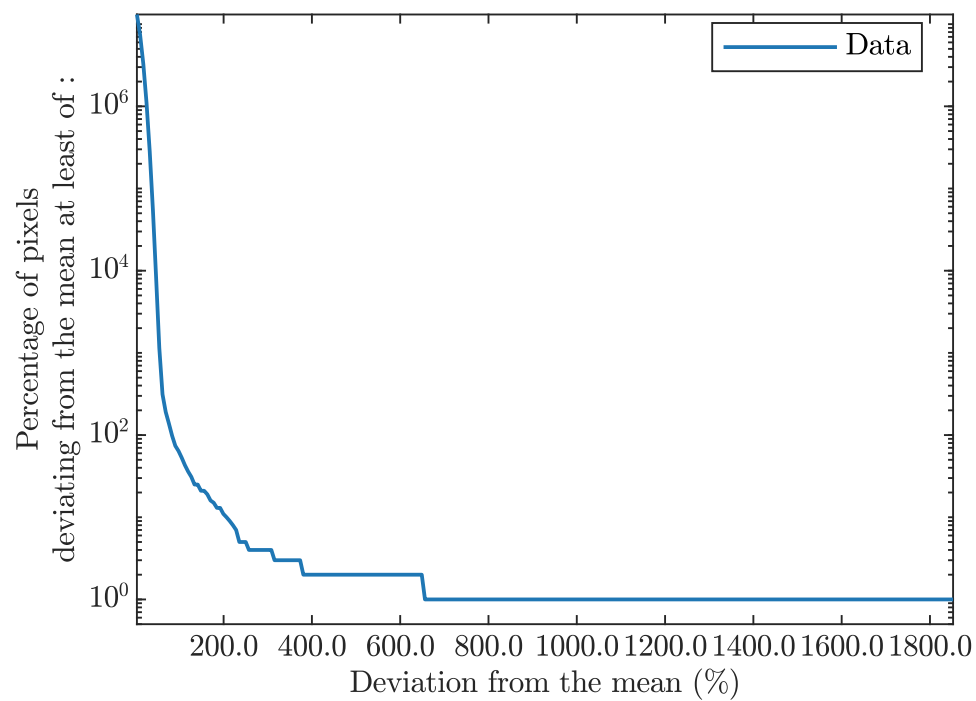
Logarithmic Histogram PRNU



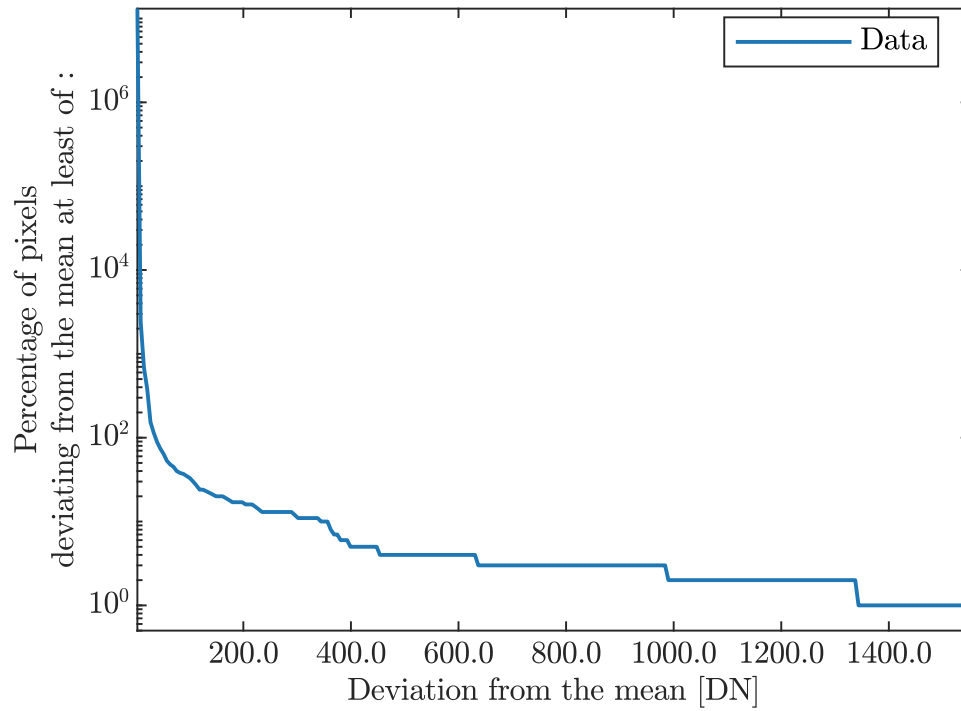
Logarithmic Histogram DSNU



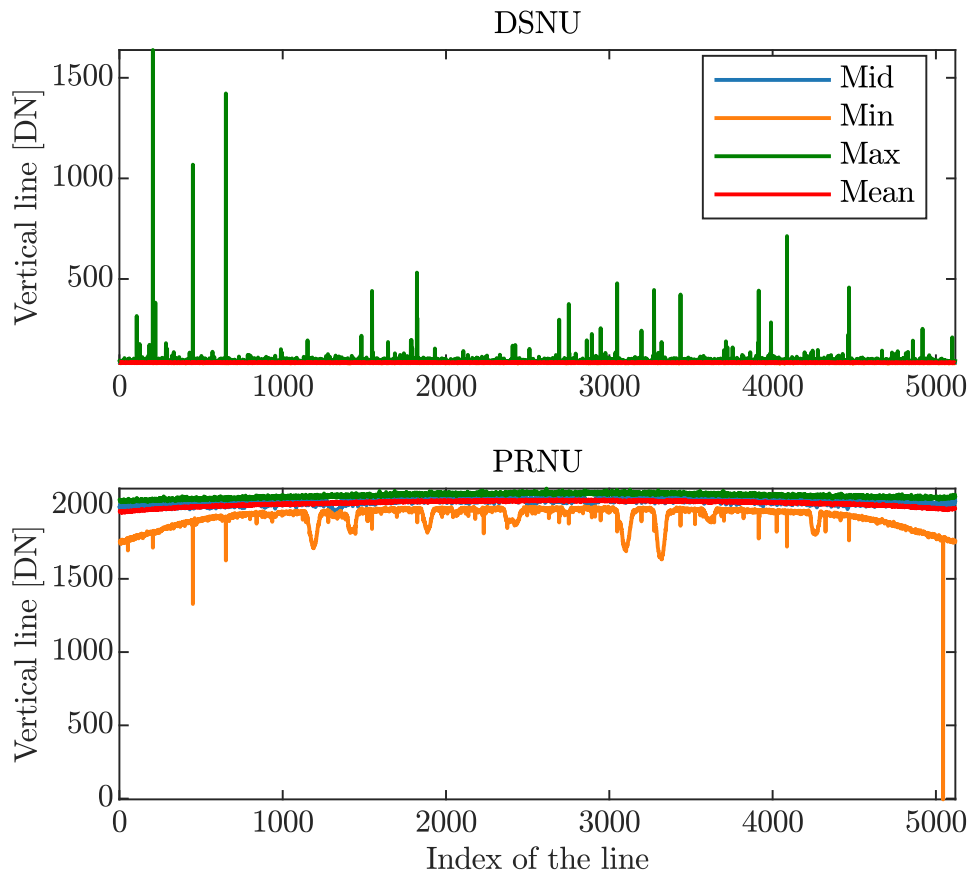
Accumulated Log Histogram PRNU



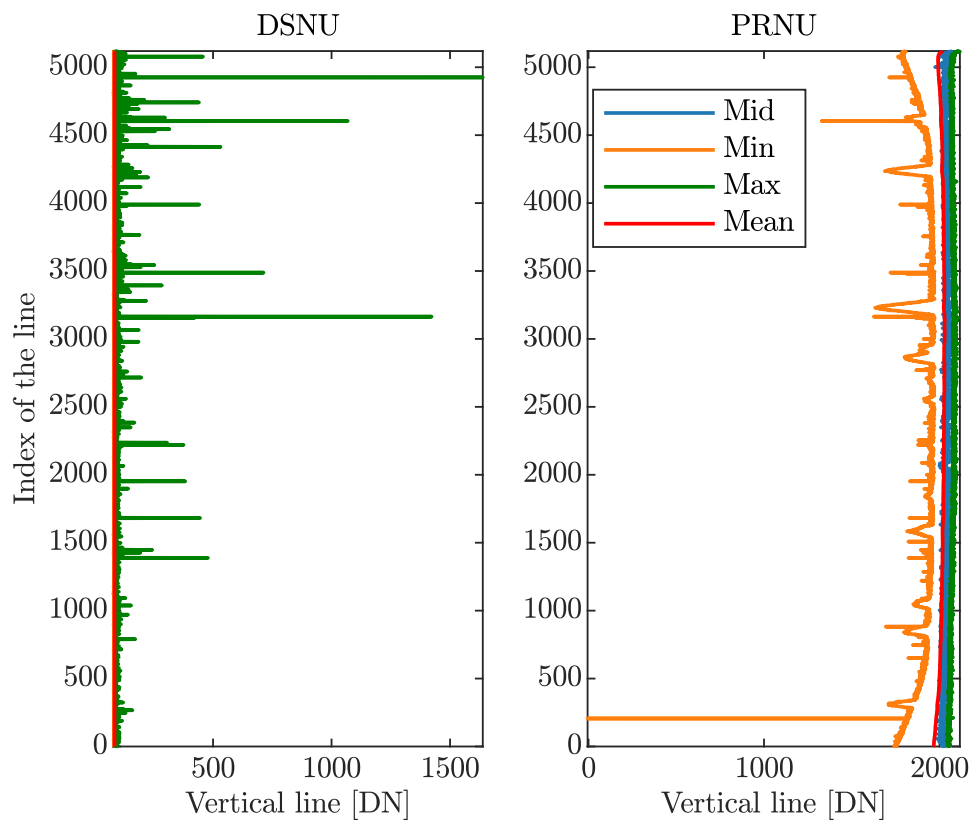
Accumulated Log Histogram DSNU



Horizontal Profile



Vertical Profile



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

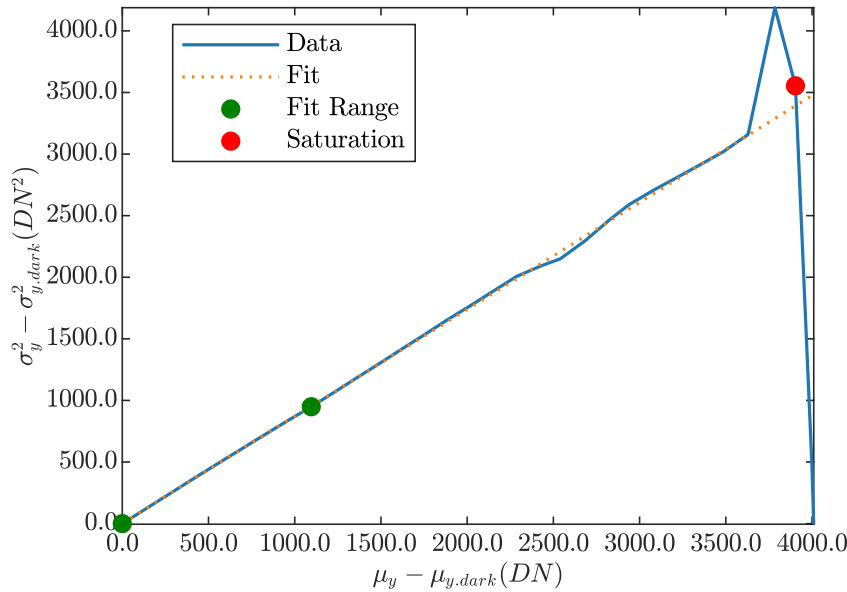
Camera setting

Gain	2.5
Black level	-1032

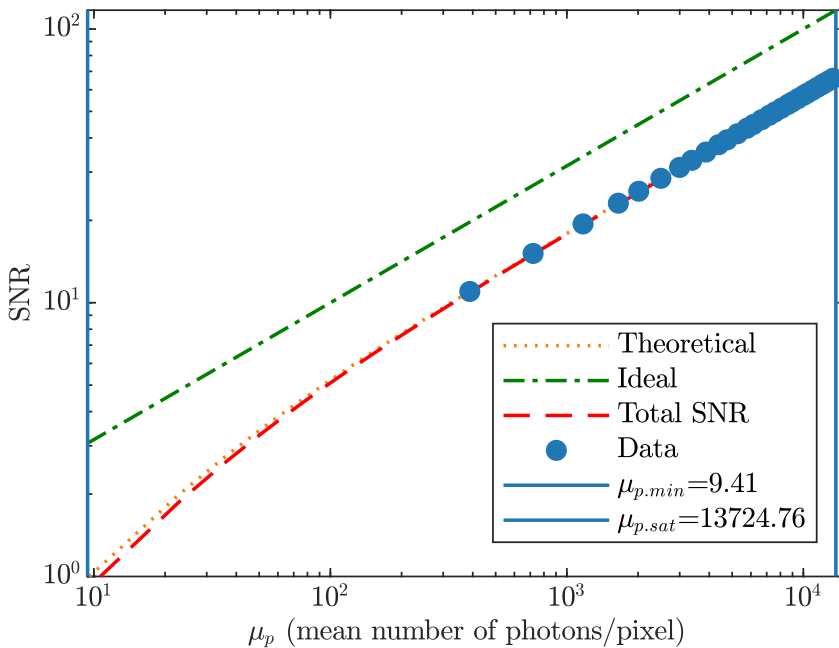
Operation point parameters

Environmental temperature	23.25
Camera body temperature	23.37
Sensor temperature	54.095
Processor temperature	65

Photon Transfer



Signal-to-Noise Ratio



Performance

Quantum efficiency

η	32.7293	%
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System gain

K	0.86787	DN/e ⁻
1/K	1.1522	e ⁻ /DN

Temporal dark noise

σ_d	2.5568	e ⁻
$\sigma_{y,dark}$	2.2376	DN

Signal-to-noise ratio

SNR _{max}	67.0225	
	36.5244	dB
	6.0666	bit
1/SNR _{max}	1.492	%

Absolute sensitivity threshold

$\mu_{e,min}$	3.0783	e ⁻
$\mu_{e,min,area}$	0.49253	e ⁻ /μm ²

Saturation capacity

$\mu_{e,sat}$	4492.0187	e ⁻
$\mu_{e,sat,area}$	718.723	e ⁻ /μm ²

Dynamic range

DR	1459.2468	
	63.2826	dB
	10.511	bit

Spatial nonuniformities

DSNU ₁₂₈₈	1.3744	e ⁻
DSNU _{1288,col}	0.45648	e ⁻
DSNU _{1288,row}	0.4099	e ⁻
DSNU _{1288,pix}	1.2299	e ⁻
PRNU ₁₂₈₈	0.49721	%
PRNU _{1288,col}	0.1187	%
PRNU _{1288,row}	0.03654	%
PRNU _{1288,pix}	0.48145	%

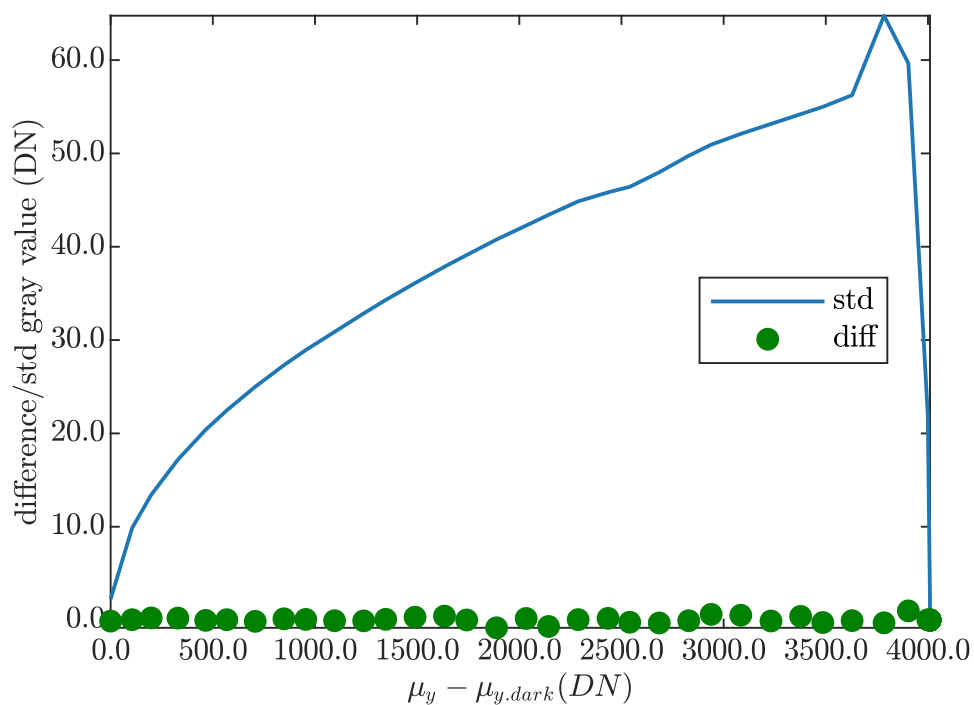
Linearity error

LE	0.0009865	%
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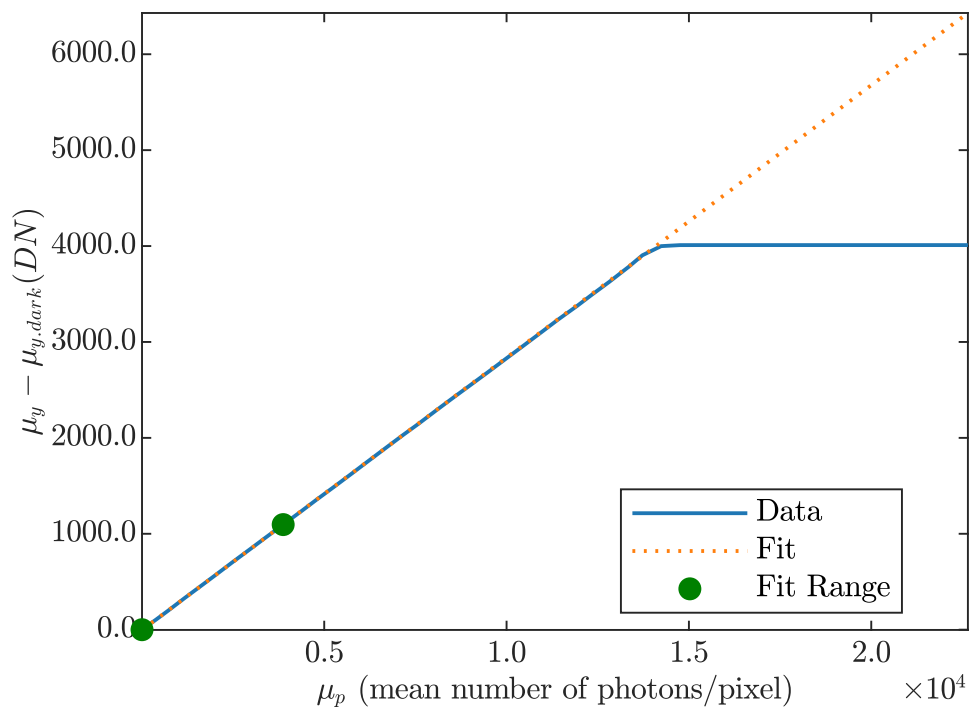
Dark current

$\mu_{l,mean}$	NaN	e ⁻ /s
$\mu_{l,var}$	2.7964	e ⁻ /s

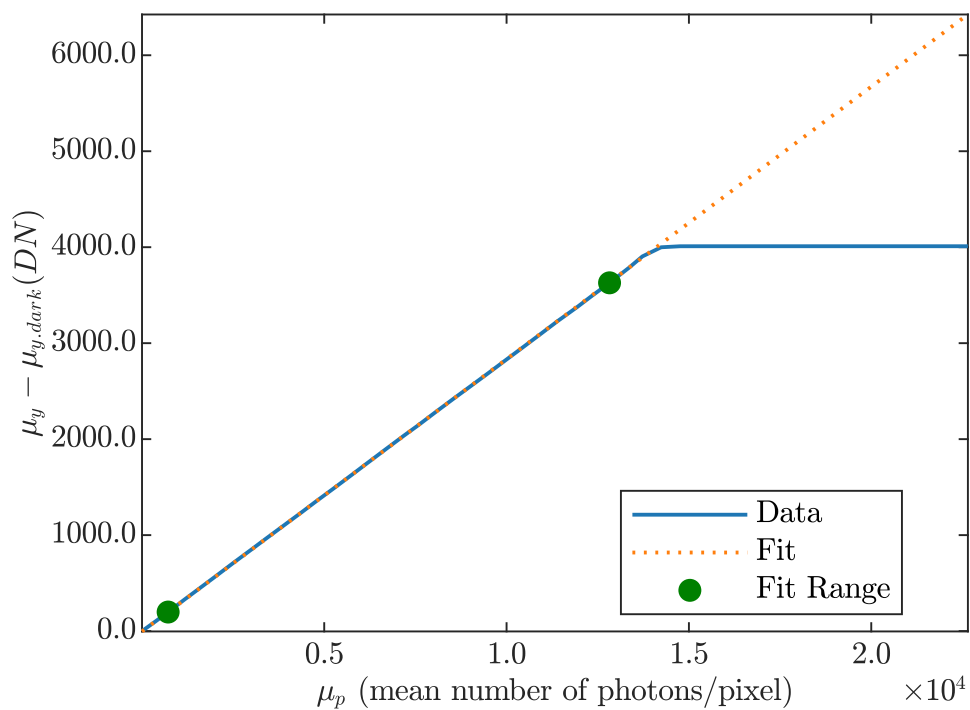
Stability check



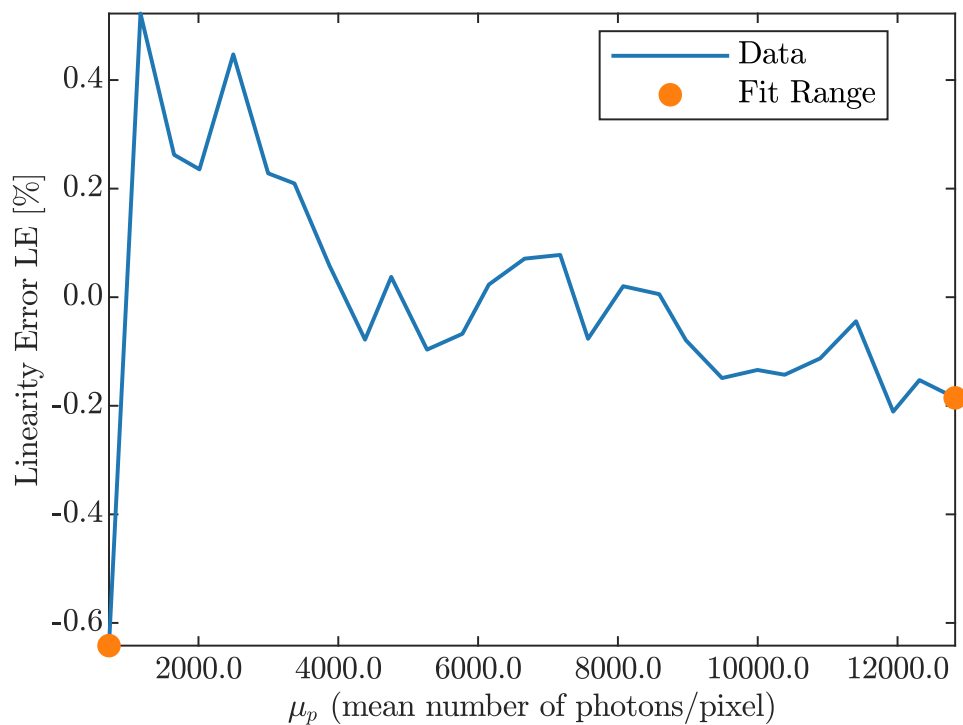
Sensitivity



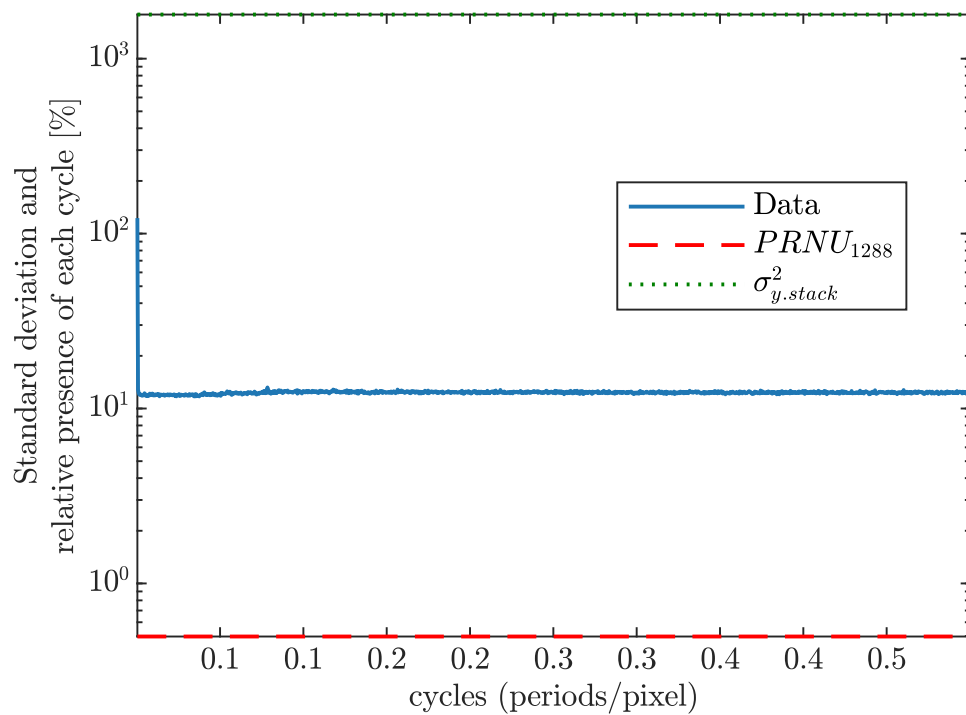
Linearity



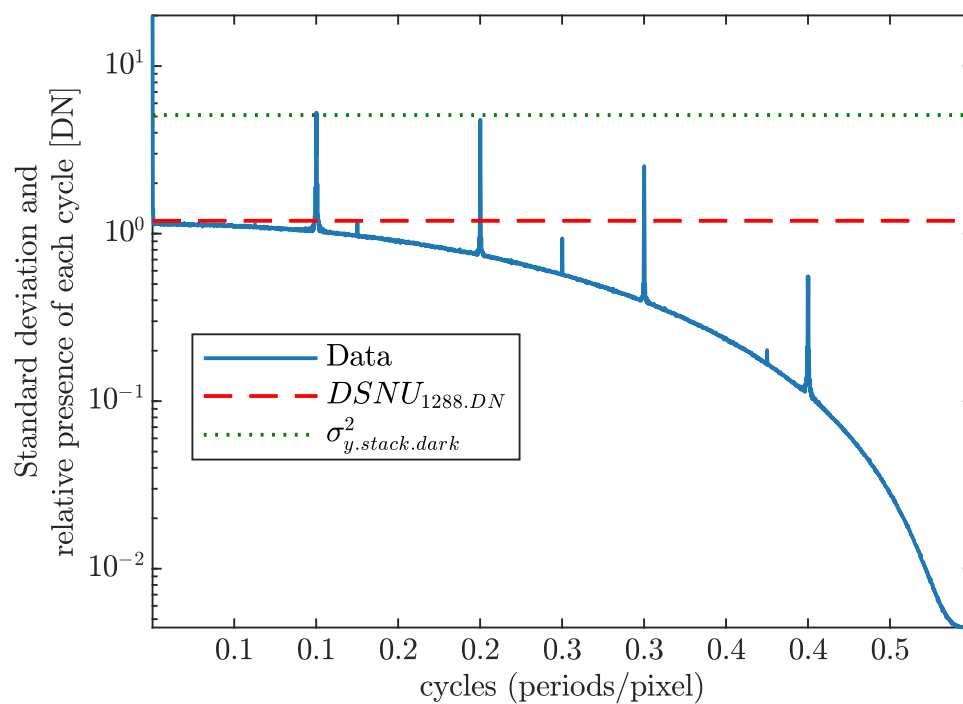
Deviation Linearity



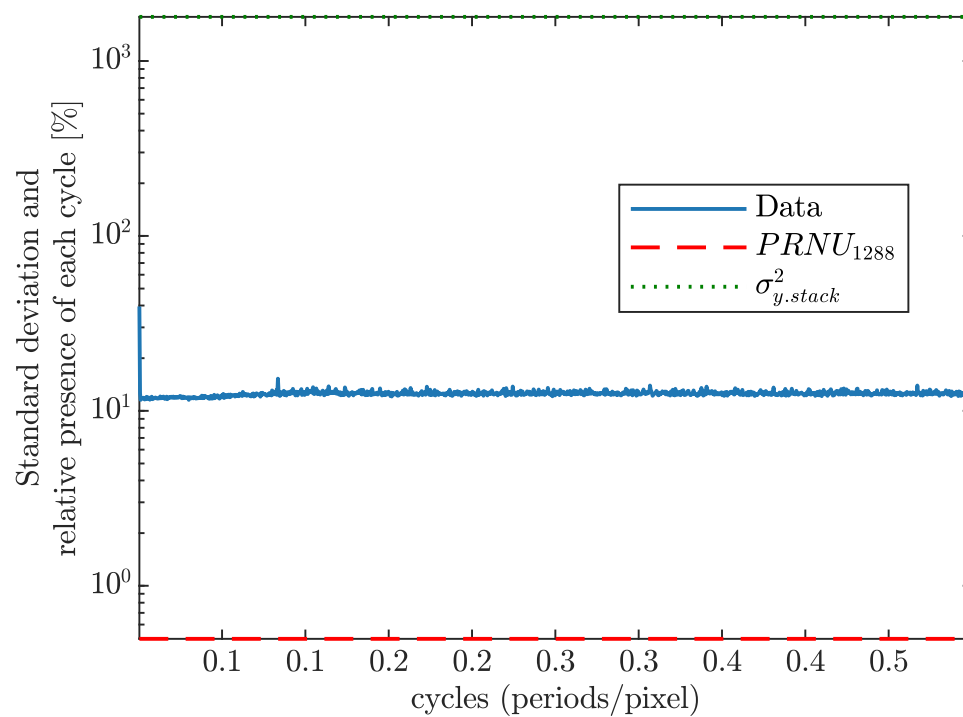
Horizontal Spectrogram PRNU



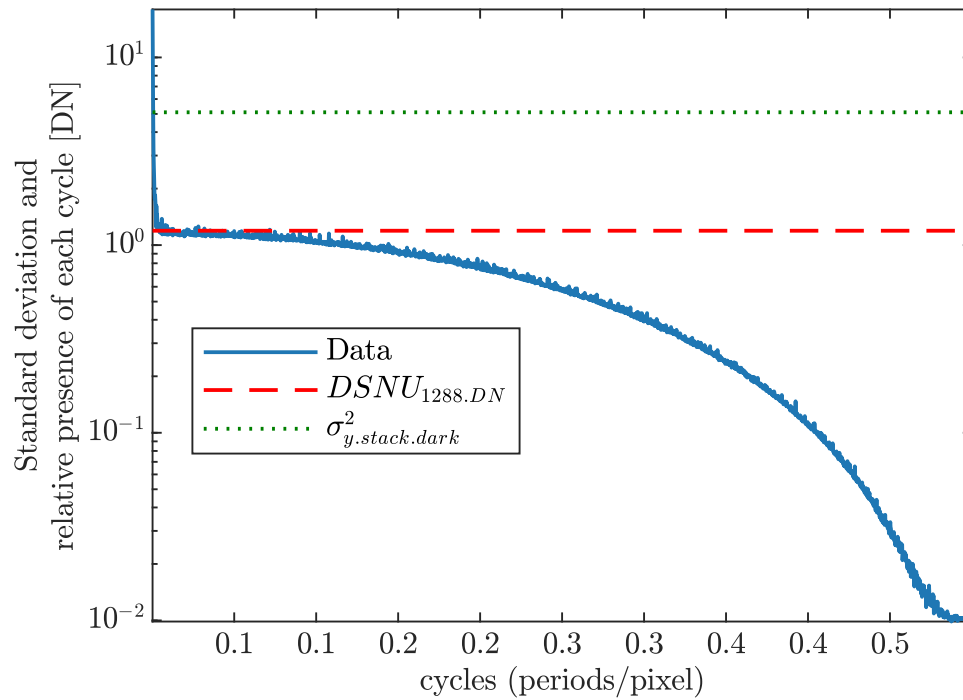
Horizontal Spectrogram DSNU



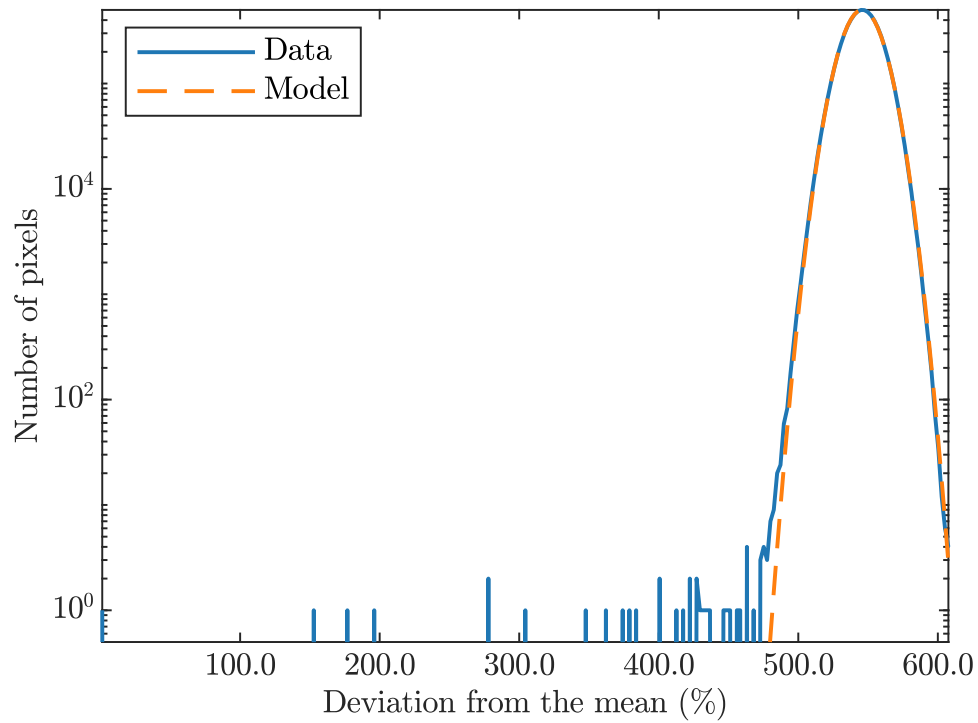
Vertical Spectrogram PRNU



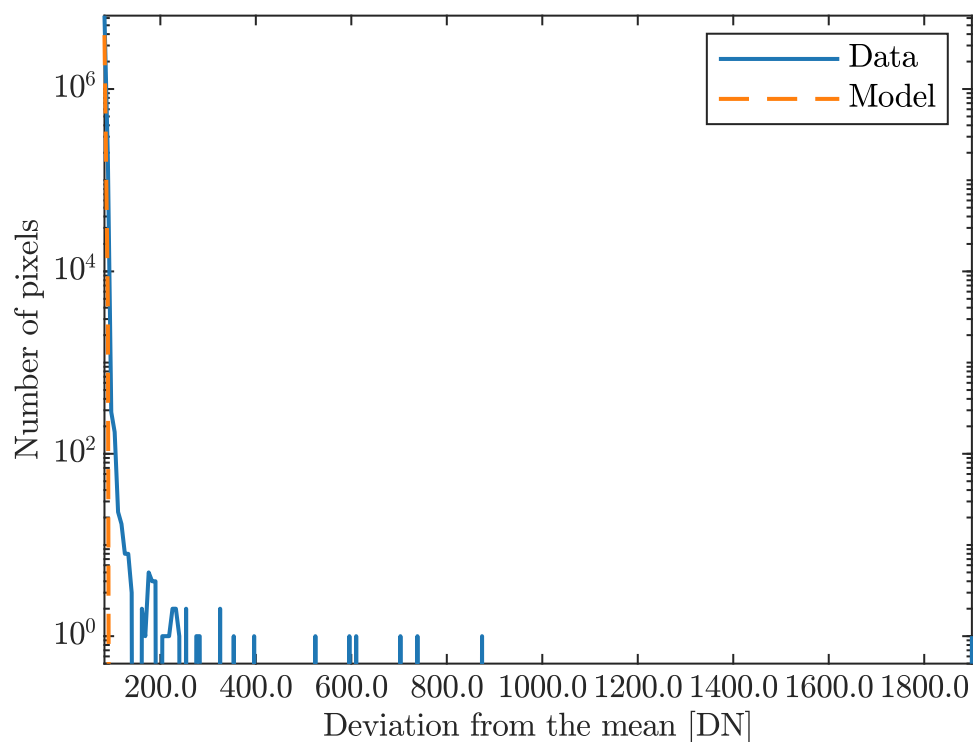
Vertical Spectrogram DSNU



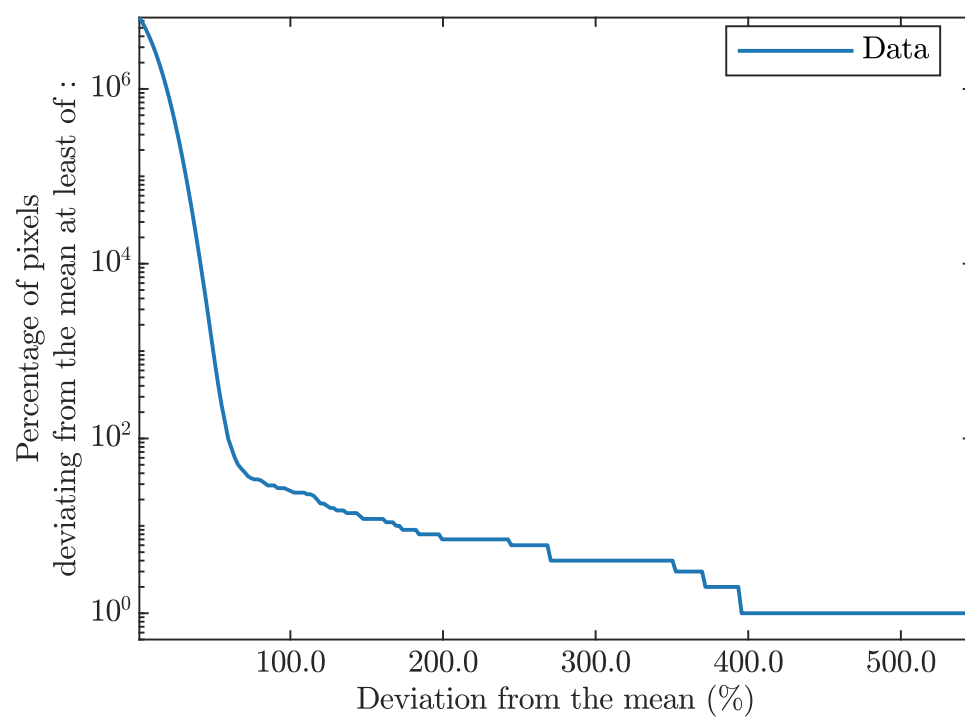
Logarithmic Histogram PRNU



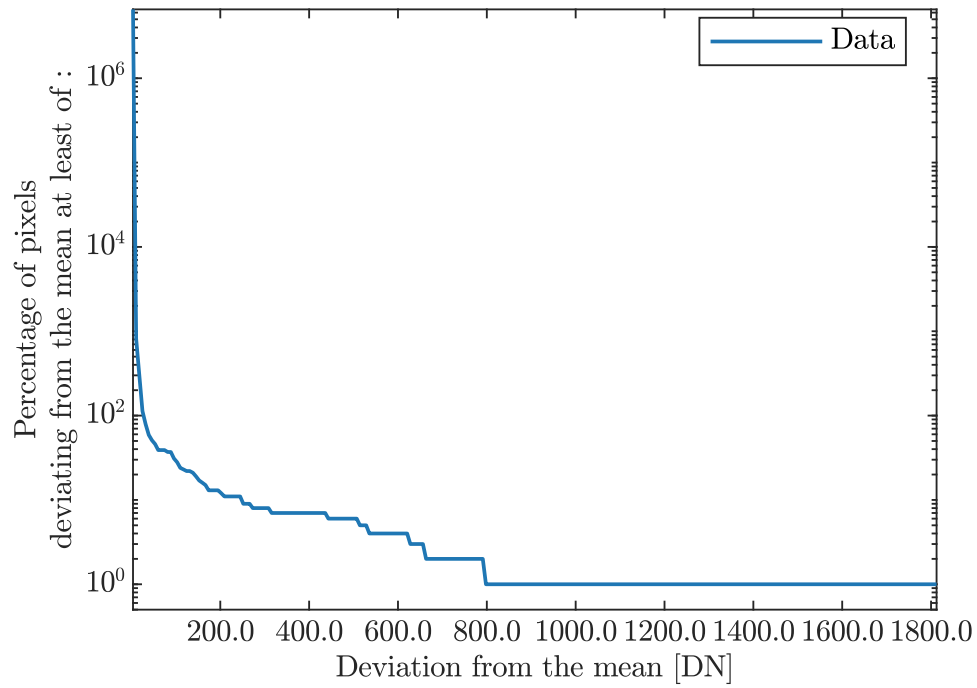
Logarithmic Histogram DSNU



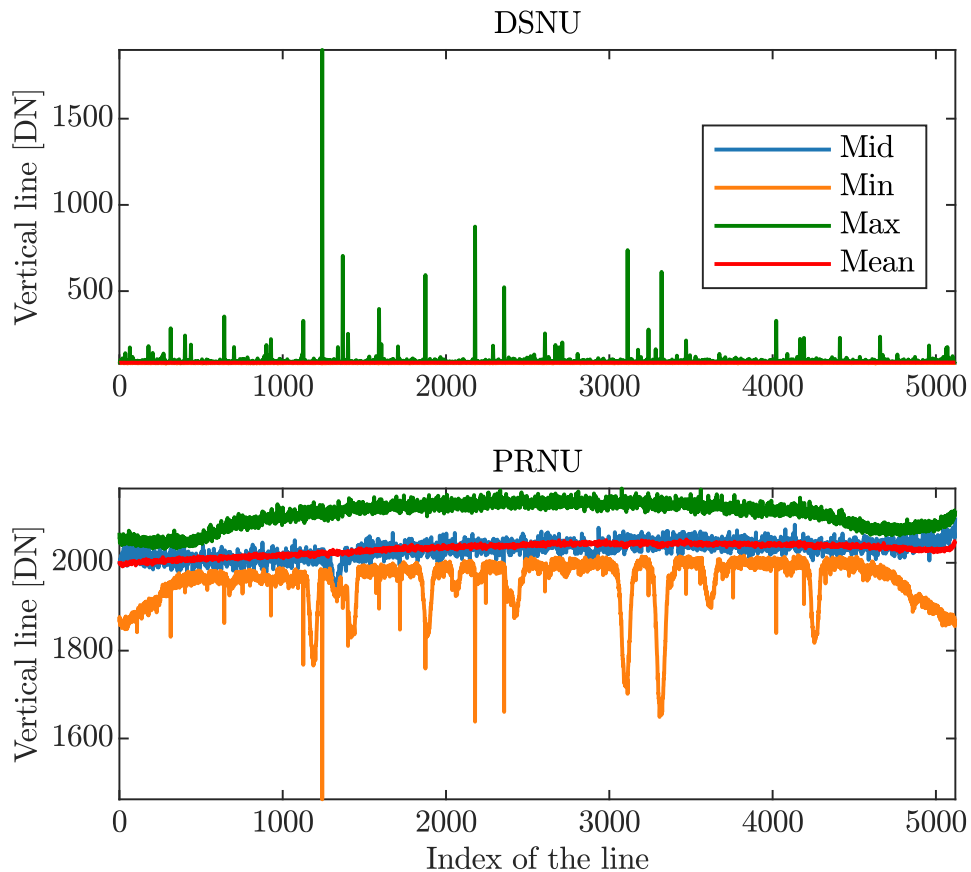
Accumulated Log Histogram PRNU



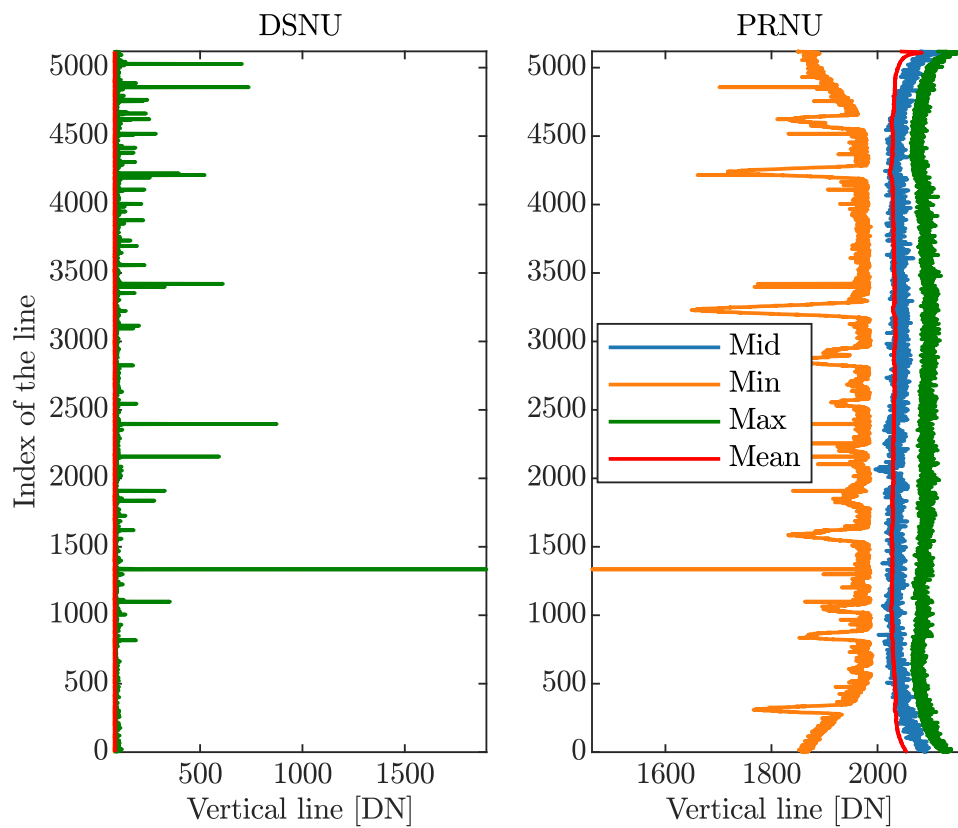
Accumulated Log Histogram DSNU



Horizontal Profile



Vertical Profile



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

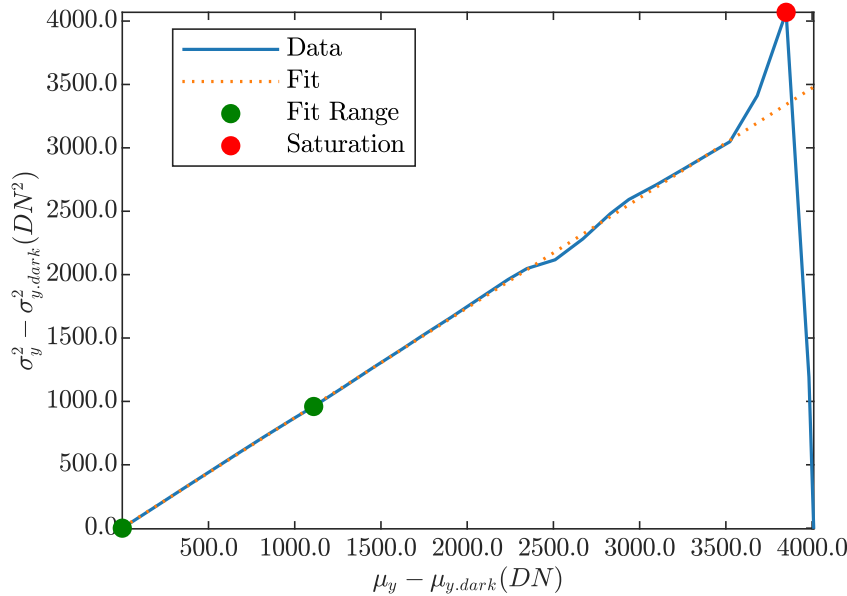
Camera setting

Gain	2.5
Black level	-1032

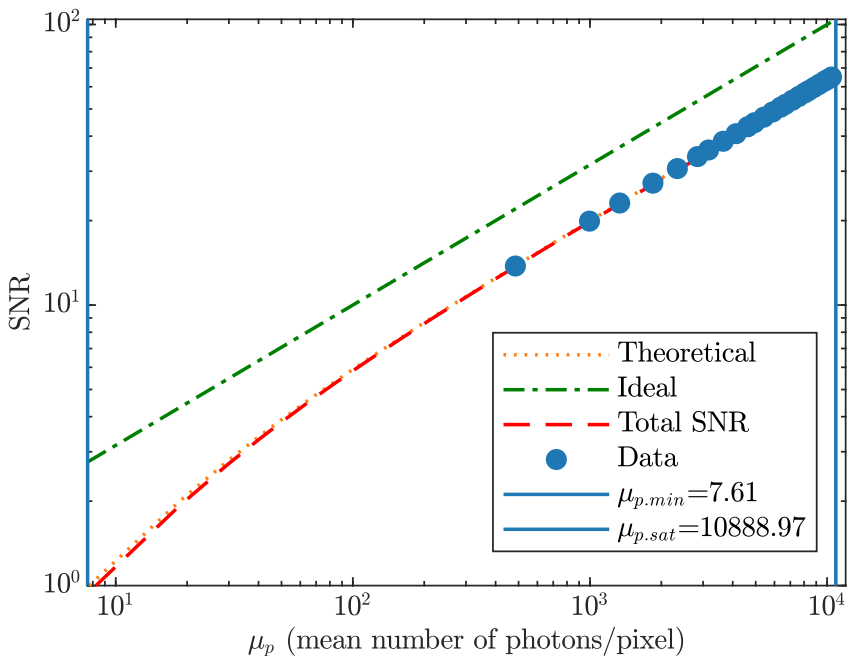
Operation point parameters

Environmental temperature	23.25
Camera body temperature	23.37
Sensor temperature	53.799
Processor temperature	65

Photon Transfer



Signal-to-Noise Ratio



Performance

Quantum efficiency

η	40.492	%
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System gain

K	0.86711	DN/e ⁻
1/K	1.1533	e ⁻ /DN

Temporal dark noise

σ_d	2.559	e ⁻
$\sigma_{y,dark}$	2.2376	DN

Signal-to-noise ratio

SNR _{max}	66.4015	
	36.4436	dB
	6.0531	bit
1/SNR _{max}	1.506	%

Absolute sensitivity threshold

$\mu_{e,min}$	3.0806	e ⁻
$\mu_{e,min,area}$	0.49289	e ⁻ /μm ²

Saturation capacity

$\mu_{e,sat}$	4409.1642	e ⁻
$\mu_{e,sat,area}$	705.4663	e ⁻ /μm ²

Dynamic range

DR	1431.2823	
	63.1145	dB
	10.4831	bit

Spatial nonuniformities

DSNU ₁₂₈₈	1.0373	e ⁻
DSNU _{1288,col}	0.49586	e ⁻
DSNU _{1288,row}	0.3737	e ⁻
DSNU _{1288,pix}	0.83098	e ⁻
PRNU ₁₂₈₈	0.50758	%
PRNU _{1288,col}	0.11951	%
PRNU _{1288,row}	0.019527	%
PRNU _{1288,pix}	0.49292	%

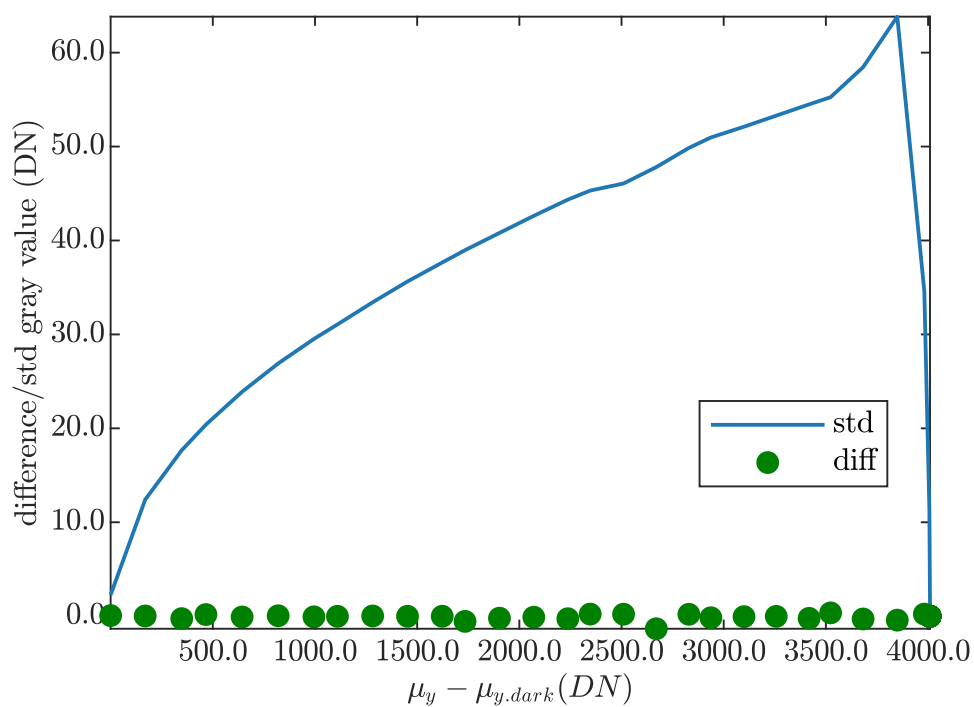
Linearity error

LE	0.00025747	%
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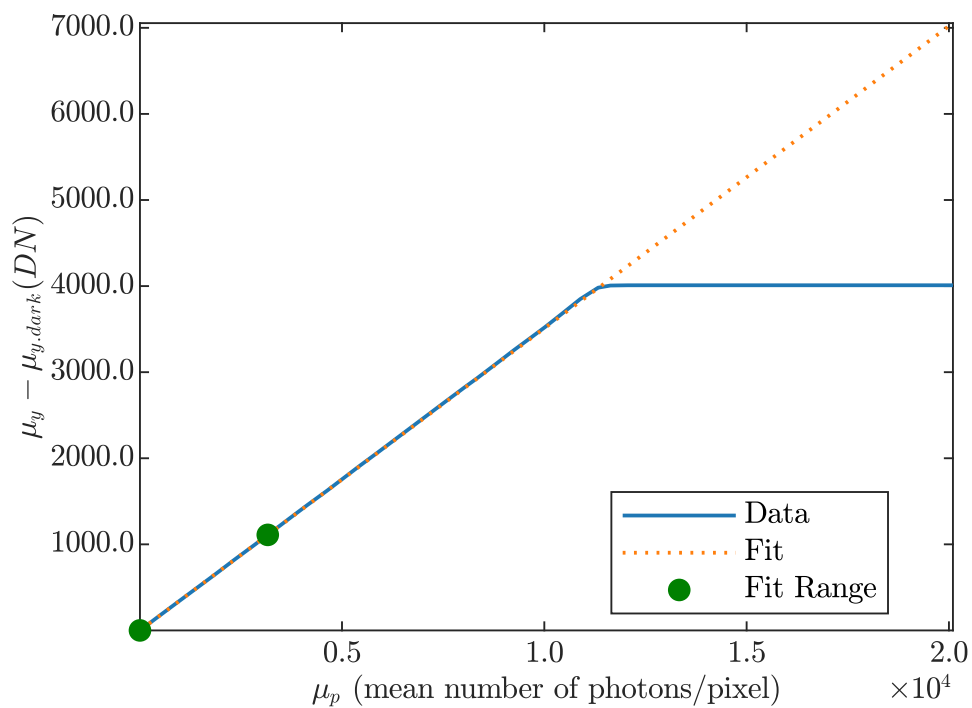
Dark current

$\mu_{l,mean}$	NaN	e ⁻ /s
$\mu_{l,var}$	2.7964	e ⁻ /s

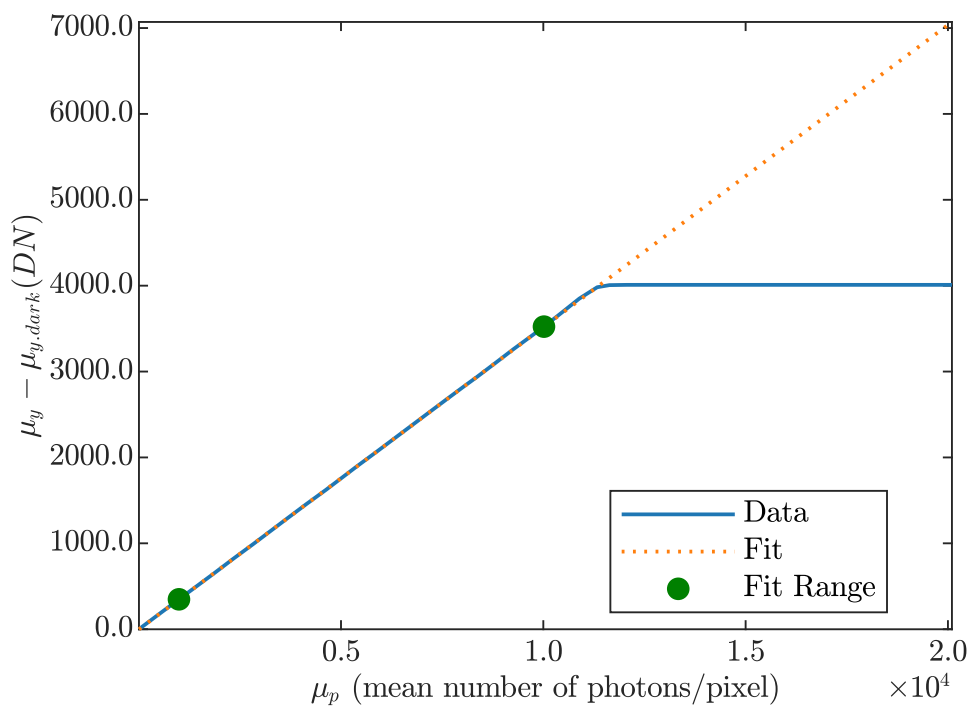
Stability check



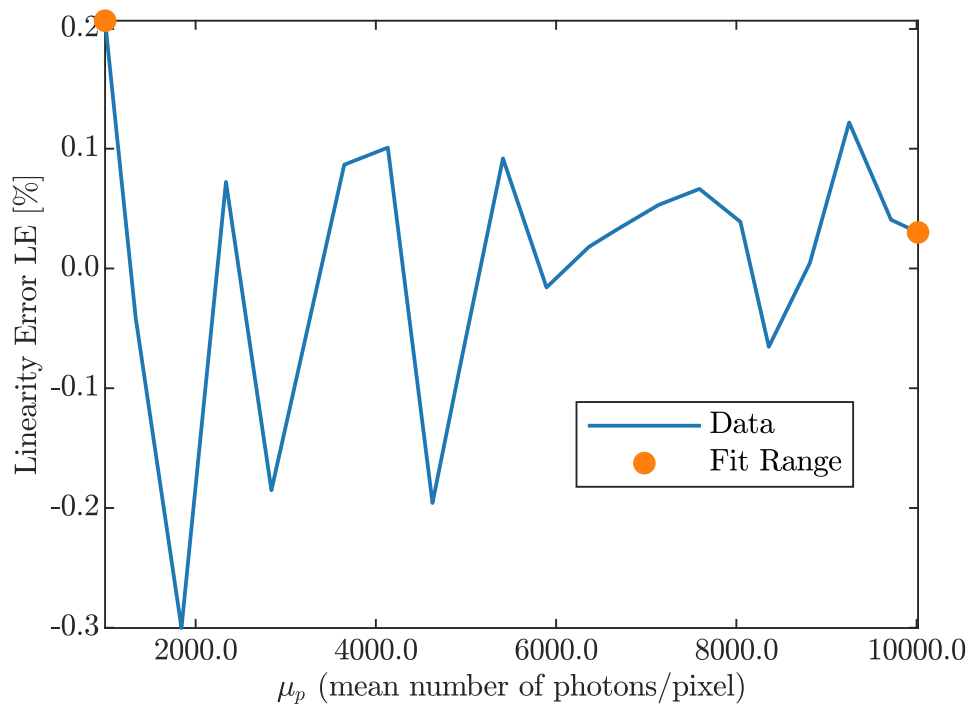
Sensitivity



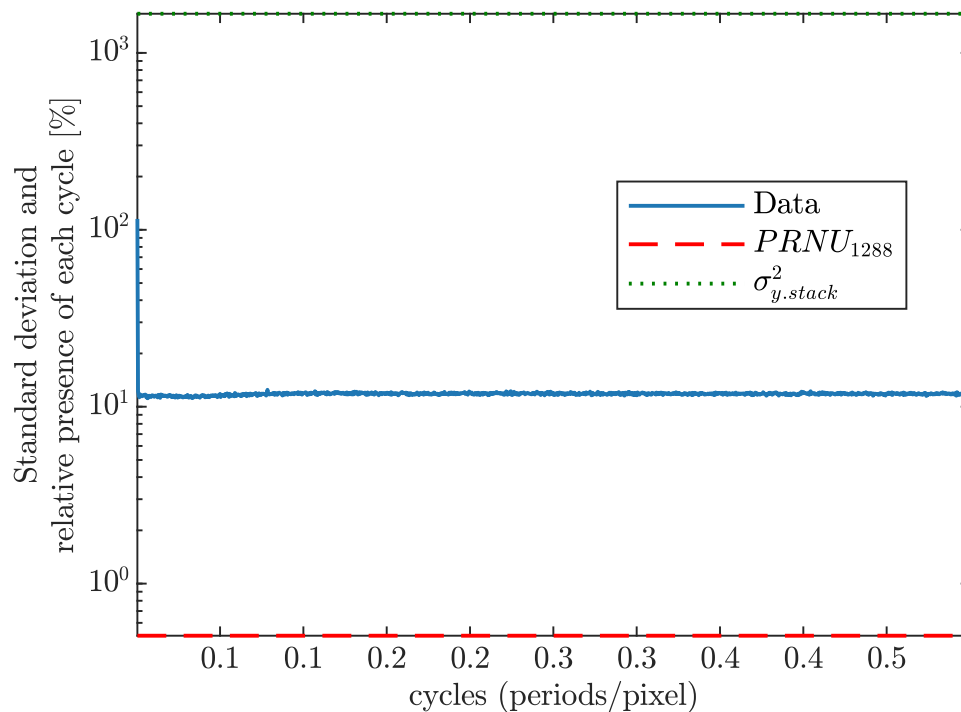
Linearity



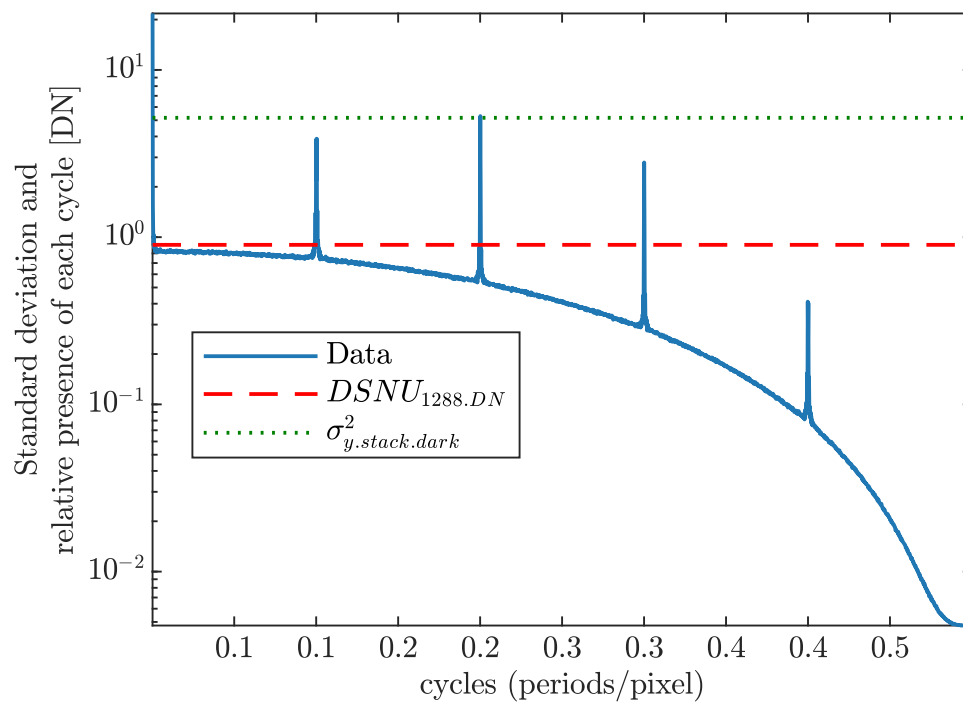
Deviation Linearity



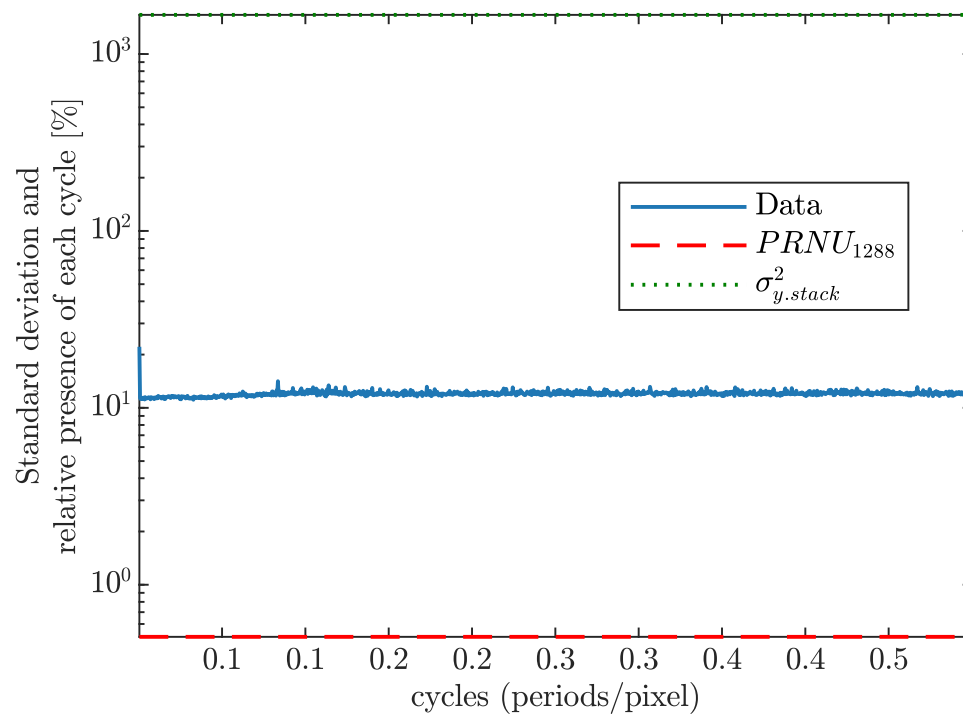
Horizontal Spectrogram PRNU



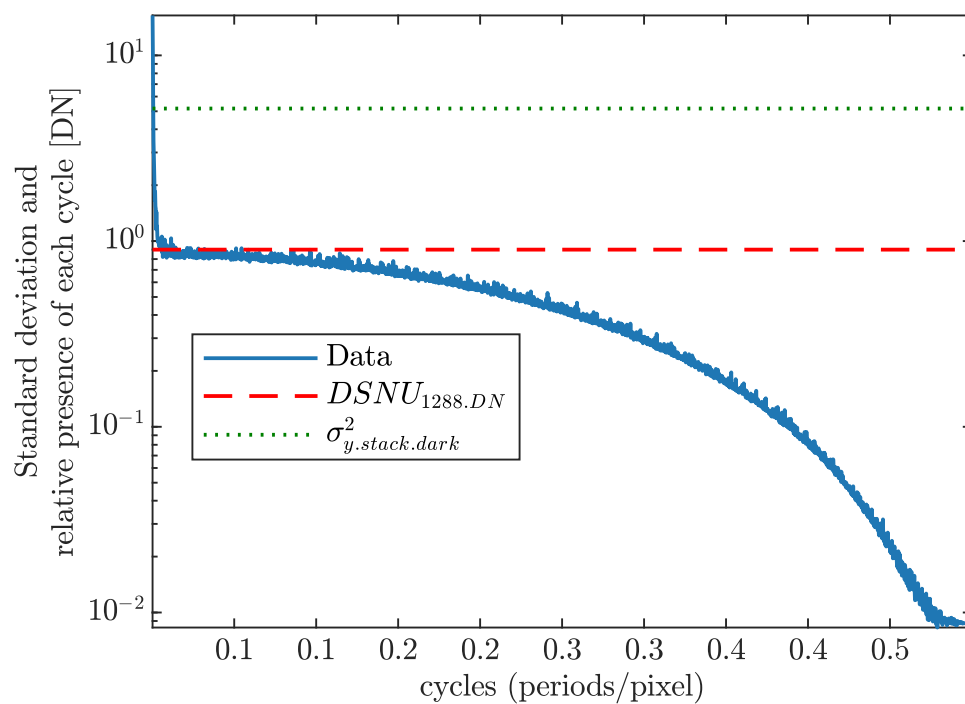
Horizontal Spectrogram DSNU



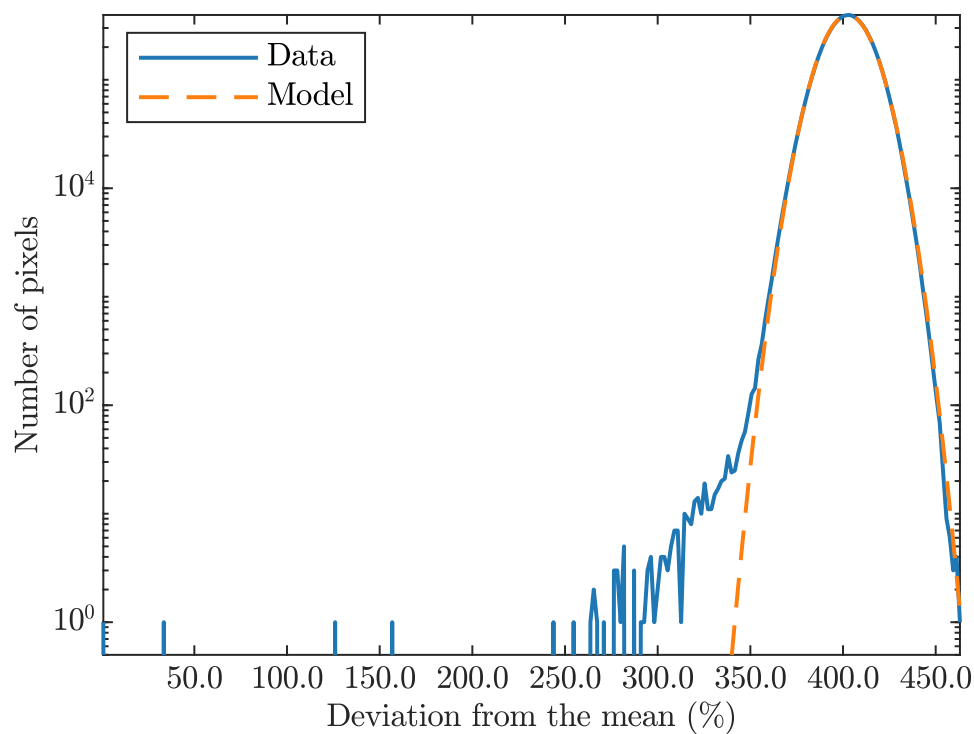
Vertical Spectrogram PRNU



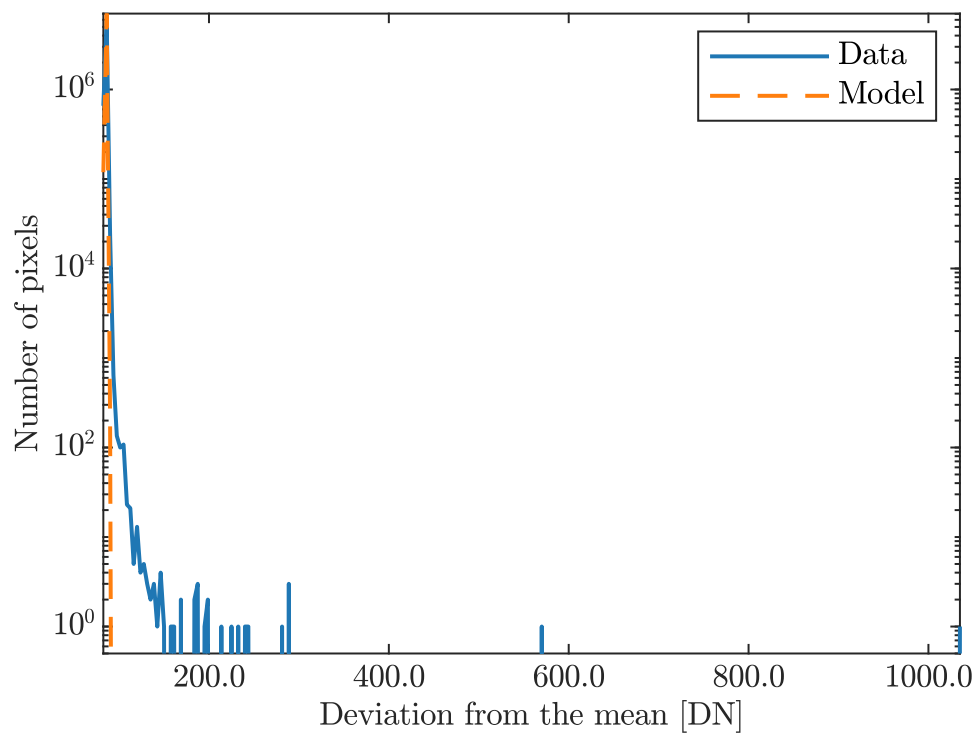
Vertical Spectrogram DSNU



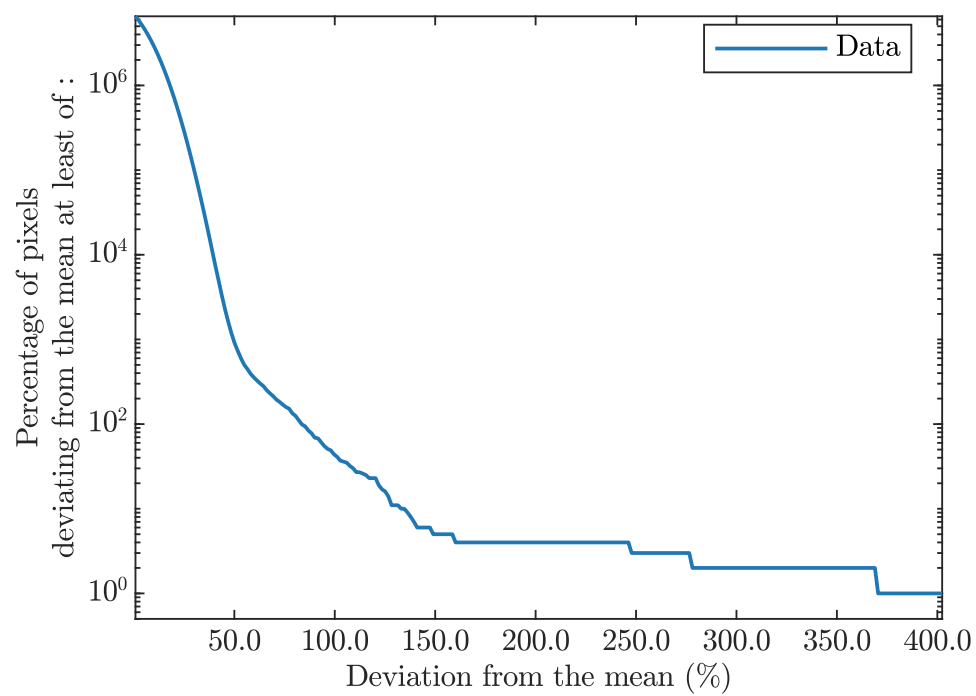
Logarithmic Histogram PRNU



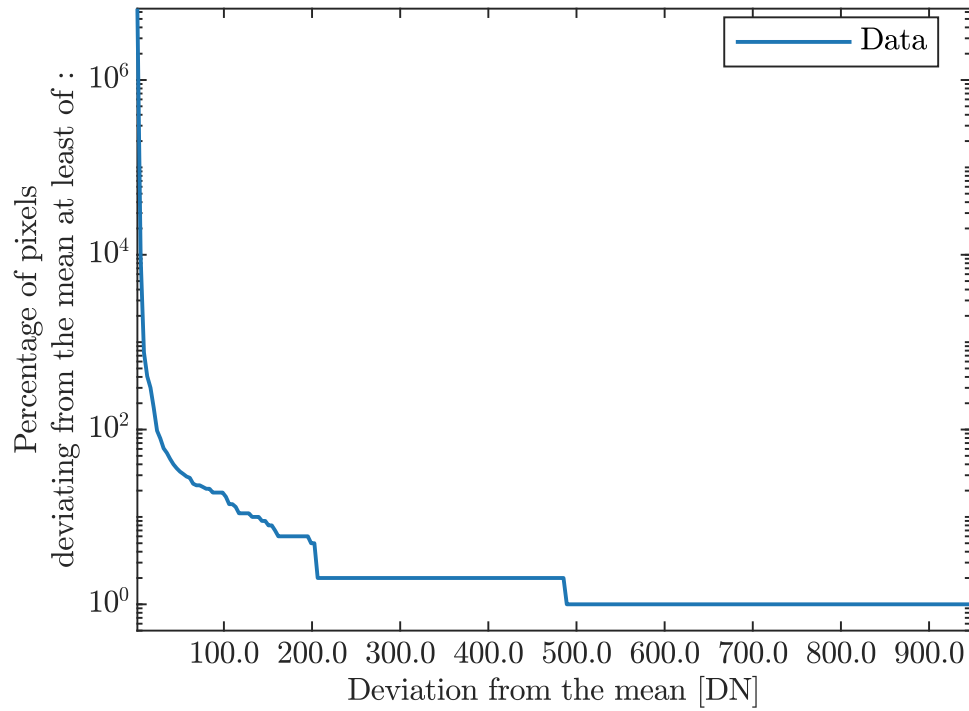
Logarithmic Histogram DSNU



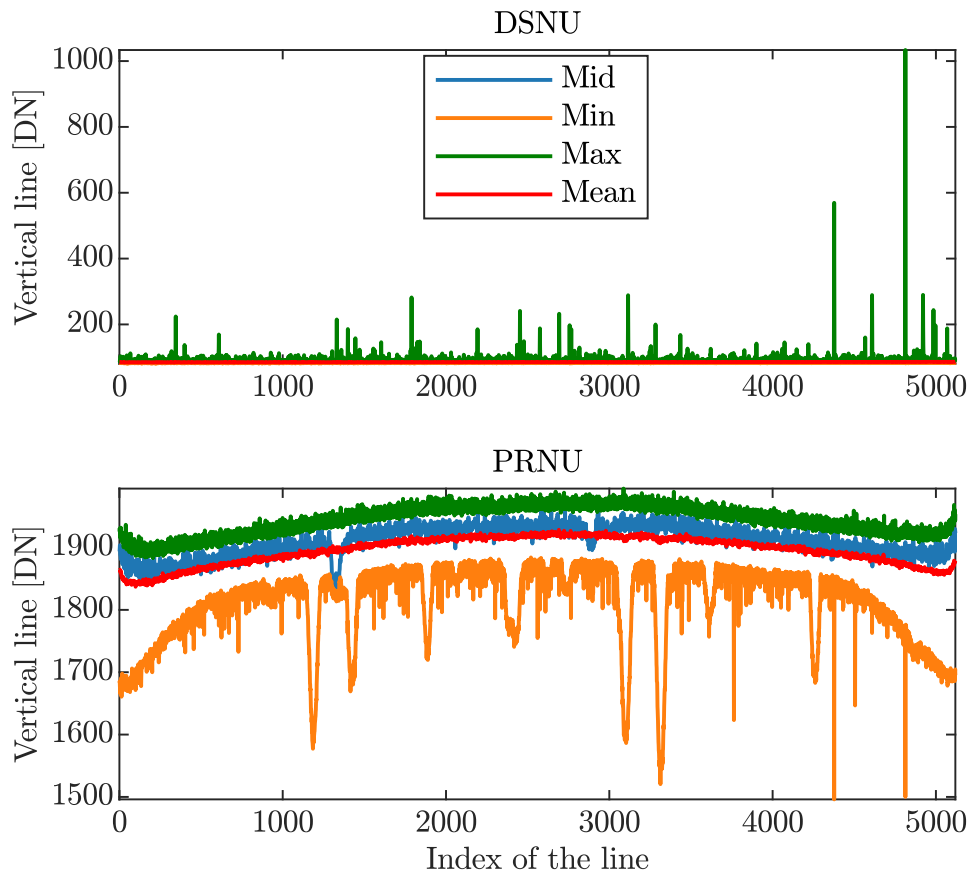
Accumulated Log Histogram PRNU



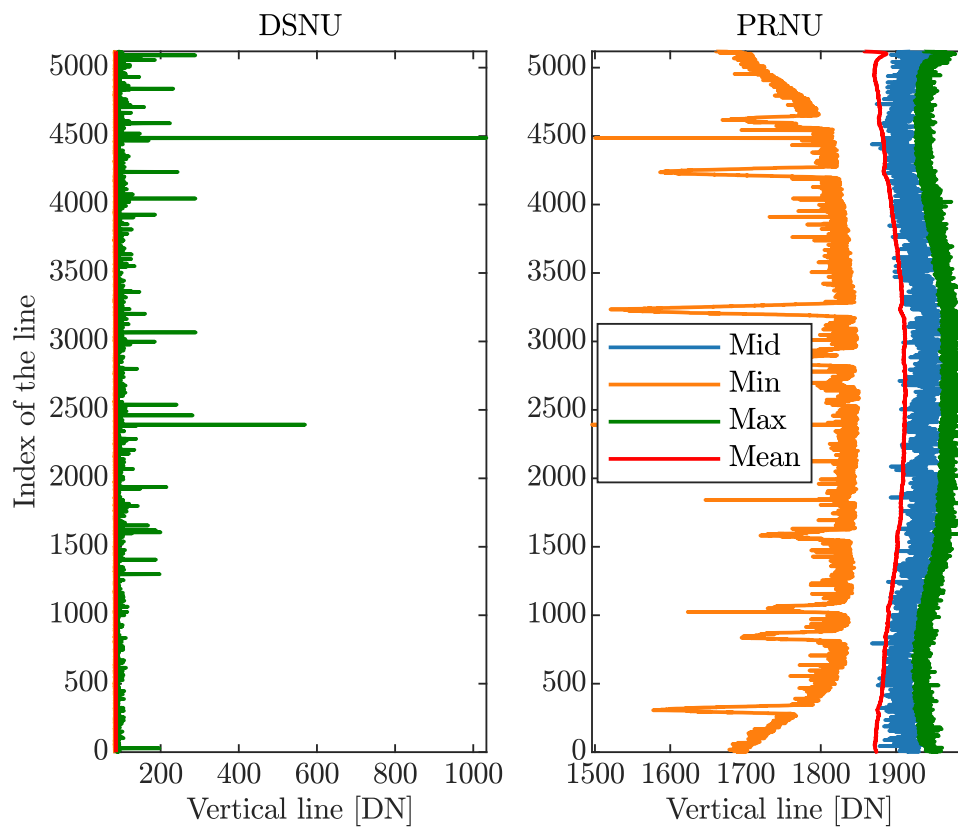
Accumulated Log Histogram DSNU



Horizontal Profile

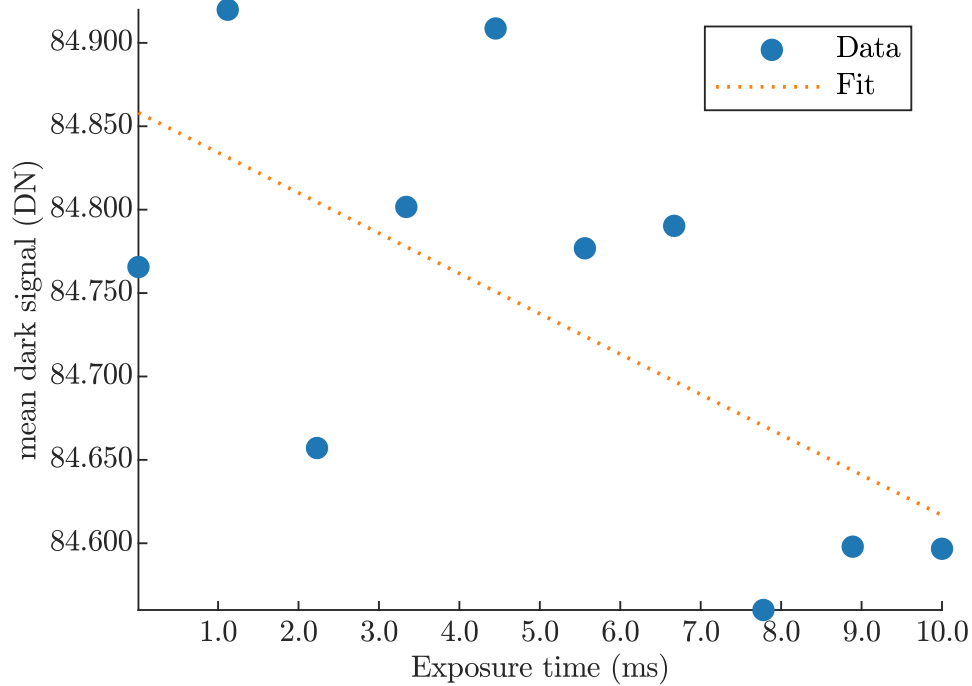


Vertical Profile

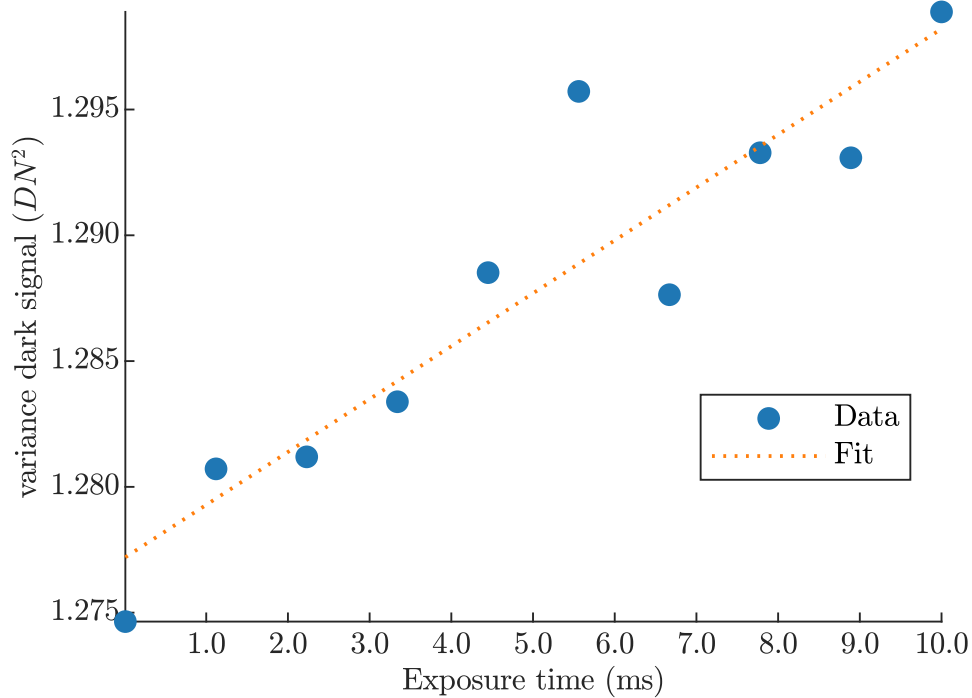


Dark Current

Dark Current from Mean



Dark Current from Variance



International Distributor

sky blue
microsystems

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