Federica A Villa

List of Publications by Year
in descending order

132 papers	3,177 citations	201674 27 h-index	168389 53 g-index
137 all docs	137 docs citations	137 times ranked	2468 citing authors

#	Article	IF	Citations
1	DarkSide-20k: A 20 tonne two-phase LAr TPC for direct dark matter detection at LNGS. European Physical Journal Plus, 2018, 133, 1.	2.6	247
2	CMOS Imager With 1024 SPADs and TDCs for Single-Photon Timing and 3-D Time-of-Flight. IEEE Journal of Selected Topics in Quantum Electronics, 2014, 20, 364-373.	2.9	198
3	Photon-efficient imaging with a single-photon camera. Nature Communications, 2016, 7, 12046.	12.8	169
4	SPAD Figures of Merit for Photon-Counting, Photon-Timing, and Imaging Applications: A Review. IEEE Sensors Journal, 2016, 16, 3-12.	4.7	161
5	100 000 Frames/s 64 Ã— 32 Single-Photon Detector Array for 2-D Imaging and 3-D Ranging. IEEE Journal of Selected Topics in Quantum Electronics, 2014, 20, 354-363.	2.9	144
6	A High-Linearity, 17 ps Precision Time-to-Digital Converter Based on a Single-Stage Vernier Delay Loop Fine Interpolation. IEEE Transactions on Circuits and Systems I: Regular Papers, 2013, 60, 557-569.	5.4	143
7	A robust and versatile platform for image scanning microscopy enabling super-resolution FLIM. Nature Methods, 2019, 16, 175-178.	19.0	132
8	Development of new photon-counting detectors for single-molecule fluorescence microscopy. Philosophical Transactions of the Royal Society B: Biological Sciences, 2013, 368, 20120035.	4.0	100
9	Fast Sensing and Quenching of CMOS SPADs for Minimal Afterpulsing Effects. IEEE Photonics Technology Letters, 2013, 25, 776-779.	2.5	93
10	SPADs and SiPMs Arrays for Long-Range High-Speed Light Detection and Ranging (LiDAR). Sensors, 2021, 21, 3839.	3.8	83
11	SPAD Smart Pixel for Time-of-Flight and Time-Correlated Single-Photon Counting Measurements. IEEE Photonics Journal, 2012, 4, 795-804.	2.0	77
12	CMOS SPADs with up to 500 Î¼m diameter and 55% detection efficiency at 420 nm. Journal of Modern Optics, 2014, 61, 102-115.	1.3	77
13	Automotive Three-Dimensional Vision Through a Single-Photon Counting SPAD Camera. IEEE Transactions on Intelligent Transportation Systems, 2016, 17, 782-795.	8.0	75
14	Single-Photon Avalanche Diodes in a 0.16 Î¼m BCD Technology With Sharp Timing Response and Red-Enhanced Sensitivity. IEEE Journal of Selected Topics in Quantum Electronics, 2018, 24, 1-9.	2.9	73
15	Measuring Incompatible Observables by Exploiting Sequential Weak Values. Physical Review Letters, 2016, 117, 170402.	7.8	66
16	Enhanced single-photon time-of-flight 3D ranging. Optics Express, 2015, 23, 24962.	3.4	52
17	High-speed multi-exposure laser speckle contrast imaging with a single-photon counting camera. Biomedical Optics Express, 2015, 6, 2865.	2.9	46
18	32 Ã— 32 CMOS SPAD Imager for Gated Imaging, Photon Timing, and Photon Coincidence. IEEE Journal of Selected Topics in Quantum Electronics, 2018, 24, 1-6.	2.9	45

#	Article	IF	Citations
19	Experiment Investigating the Connection between Weak Values and Contextuality. Physical Review Letters, 2016, 116, 180401.	7.8	44
20	Determining the quantum expectation value by measuring a single photon. Nature Physics, 2017, 13, 1191-1194.	16.7	43
21	Compact, multi-exposure speckle contrast optical spectroscopy (SCOS) device for measuring deep tissue blood flow. Biomedical Optics Express, 2018, 9, 322.	2.9	41
22	Low-noise and large-area CMOS SPADs with timing response free from slow tails. , 2012, , .		39
23	Imaging and certifying high-dimensional entanglement with a single-photon avalanche diode camera. Npj Quantum Information, 2020, 6, .	6.7	37
24	Confocal-based fluorescence fluctuation spectroscopy with a SPAD array detector. Light: Science and Applications, 2021, 10, 31.	16.6	37
25	SPAD-based asynchronous-readout array detectors for image-scanning microscopy. Optica, 2020, 7, 755.	9.3	37
26	Fill-factor improvement of Si CMOS single-photon avalanche diode detector arrays by integration of diffractive microlens arrays. Optics Express, 2015, 23, 33777.	3.4	36
27	Two-photon image-scanning microscopy with SPAD array and blind image reconstruction. Biomedical Optics Express, 2020, 11, 2905.	2.9	33
28	Single-photon pulsed-light indirect time-of-flight 3D ranging. Optics Express, 2013, 21, 5086.	3.4	32
29	High-Speed Quantum Random Number Generation Using CMOS Photon Counting Detectors. IEEE Journal of Selected Topics in Quantum Electronics, 2015, 21, 23-29.	2.9	32
30	Spectrally Resolved Single-Photon Timing of Silicon Photomultipliers for Time-Domain Diffuse Spectroscopy. IEEE Photonics Journal, 2015, 7, 1-12.	2.0	28
31	High-Fill-Factor <inline-formula> <tex-math notation="LaTeX">$60imes 1$ </tex-math></inline-formula> SPAD Array With 60 Subnanosecond Integrated TDCs. IEEE Photonics Technology Letters, 2015, 27, 1261-1264.	2.5	28
32	Ultra high-throughput single molecule spectroscopy with a 1024 pixel SPAD. Proceedings of SPIE, 2011, 7905, .	0.8	27
33	Anomalous weak values and the violation of a multiple-measurement Leggett-Garg inequality. Physical Review A, 2017, 96, .	2.5	26
34	Single Photon Avalanche Diode Arrays for Quantum Imaging and Microscopy. Advanced Quantum Technologies, 2021, 4, 2100005.	3.9	25
35	Conformational dynamics in TRPV1 channels reported by an encoded coumarin amino acid. ELife, 2017, 6, .	6.0	25
36	SPICE Electrical Models and Simulations of Silicon Photomultipliers. IEEE Transactions on Nuclear Science, 2015, 62, 1950-1960.	2.0	24

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37	Real-time multispectral fluorescence lifetime imaging using Single Photon Avalanche Diode arrays. Scientific Reports, 2020, 10, 8116.	3.3	24
38	Wearable Multi-Frequency and Multi-Segment Bioelectrical Impedance Spectroscopy for Unobtrusively Tracking Body Fluid Shifts during Physical Activity in Real-Field Applications: A Preliminary Study. Sensors, 2016, 16, 673.	3.8	23
39	Spatial images from temporal data. Optica, 2020, 7, 900.	9.3	23
40	Low-noise low-jitter 32-pixels CMOS single-photon avalanche diodes array for single-photon counting from 300 nm to 900 nm. Review of Scientific Instruments, 2013, 84, 123112.	1.3	22
41	16-Channel Module Based on a Monolithic Array of Single-Photon Detectors and 10-ps Time-to-Digital Converters. IEEE Journal of Selected Topics in Quantum Electronics, 2014, 20, 218-225.	2.9	22
42	Single Photon Avalanche Diode Arrays for Time-Resolved Raman Spectroscopy. Sensors, 2021, 21, 4287.	3.8	22
43	Large-Area, Fast-Gated Digital SiPM With Integrated TDC for Portable and Wearable Time-Domain NIRS. IEEE Journal of Solid-State Circuits, 2020, 55, 3097-3111.	5.4	21
44	Integrated Circuit for Subnanosecond Gating of InGaAs/InP SPAD. IEEE Journal of Quantum Electronics, 2015, 51, 1-7.	1.9	20
45	A multipixel diffuse correlation spectroscopy system based on a single photon avalanche diode array. Journal of Biophotonics, 2019, 12, e201900091.	2.3	19
46	Single-Photon Detectors Modeling and Selection Criteria for High-Background LiDAR. IEEE Sensors Journal, 2020, 20, 7021-7032.	4.7	19
47	High concentration factor diffractive microlenses integrated with CMOS single-photon avalanche diode detector arrays for fill-factor improvement. Applied Optics, 2020, 59, 4488.	1.8	19
48	SPAD Pixel With Sub-NS Dead-Time for High-Count Rate Applications. IEEE Journal of Selected Topics in Quantum Electronics, 2022, 28, 1-8.	2.9	19
49	Cryogenic Characterization of FBK RGB-HD SiPMs. Journal of Instrumentation, 2017, 12, P09030-P09030.	1.2	16
50	Investigating the Effects of the Interaction Intensity in a Weak Measurement. Scientific Reports, 2018, 8, 6959.	3.3	16
51	Fast-Gated 16 Ã— 1 SPAD Array for Non-Line-of-Sight Imaging Applications. Instruments, 2020, 4, 14.	1.8	16
52	10 ps resolution, 160 ns full scale range and less than 1.5% differential non-linearity time-to-digital converter module for high performance timing measurements. Review of Scientific Instruments, 2012, 83, 074703.	1.3	15
53	Memory effect in silicon time-gated single-photon avalanche diodes. Journal of Applied Physics, 2015, 117, .	2.5	15
54	Deep skin detection on low resolution grayscale images. Pattern Recognition Letters, 2020, 131, 322-328.	4.2	15

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55	New photon-counting detectors for single-molecule fluorescence spectroscopy and imaging. , 2011, 8033, 803316.		14
56	Planar CMOS analog SiPMs: design, modeling, and characterization. Journal of Modern Optics, 2015, 62, 1693-1702.	1.3	14
57	Gated SPAD Arrays for Single-Photon Time-Resolved Imaging and Spectroscopy. IEEE Photonics Journal, 2019, 11, 1-10.	2.0	13
58	Feasibility of Long-Term Monitoring of Multifrequency and Multisegment Body Impedance by Portable Devices. IEEE Transactions on Biomedical Engineering, 2014, 61, 1877-1886.	4.2	10
59	SPAD imagers for remote sensing at the single-photon level. , 2012, , .		9
60	Spot Tracking and TDC Sharing in SPAD Arrays for TOF LiDAR. Sensors, 2021, 21, 2936.	3.8	9
61	Historical Perspectives, State of Art and Research Trends of SPAD Arrays and Their Applications (Part) Tj ETQq1 1 0.784314 rgBT /Ove	2.1	9
62	Range-Finding SPAD Array With Smart Laser-Spot Tracking and TDC Sharing for Background Suppression. IEEE Open Journal of the Solid-State Circuits Society, 2022, 2, 26-37.	2.7	8
63	Indirect time-of-flight 3D ranging based on SPADs. Proceedings of SPIE, 2012, , .	0.8	7
64	CMOS single photon sensor with in-pixel TDC for Time-of-Flight applications. , 2013, , .		7
65	Analog SiPM in planar CMOS technology. , 2014, , .		7
66	Low-Cost and Compact Single-Photon Counter Based on a CMOS SPAD Smart Pixel. IEEE Photonics Technology Letters, 2015, 27, 2504-2507.	2.5	7
67	Eight-Channel 21 ps Precision <inline-formula> <tex-math notation="LaTeX">$10~mu ext{s}$ </tex-math></inline-formula> Range Time-to-Digital Converter Module. IEEE Transactions on Instrumentation and Measurement, 2016, 65, 423-430.	4.7	7
68	A novel sub-10 ps resolution TDC for CMOS SPAD array. , 2018, , .		7
69	Biometric Signals Estimation Using Single Photon Camera and Deep Learning. Sensors, 2020, 20, 6102.	3.8	7
70	Cooled SPAD array detector for low light-dose fluorescence laser scanning microscopy. Biophysical Reports, 2021, 1, 100025.	1.2	7
71	DEIS: Dependability Engineering Innovation for Industrial CPS. Lecture Notes in Mobility, 2018, , 151-163.	0.2	7
72	Photon-efficient computational imaging with a single-photon camera. , 2016, , .		7

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73	Large-area CMOS SPADs with very low dark counting rate. Proceedings of SPIE, 2013, , .	0.8	6
74	Multichannel low power time-to-digital converter card with 21 ps precision and full scale range up to 10 Î¼s. Review of Scientific Instruments, 2014, 85, 114703.	1.3	6
75	Multispectral Depth-Resolved Fluorescence Lifetime Spectroscopy Using SPAD Array Detectors and Fiber Probes. Sensors, 2019, 19, 2678.	3.8	6
76	High Detection Rate Fast-Gated CMOS Single-Photon Avalanche Diode Module. IEEE Photonics Journal, 2020, 12, 1-12.	2.0	6
77	Multi-Channel SPAD Chip for Silicon Photonics With Multi-Photon Coincidence Detection. IEEE Journal of Selected Topics in Quantum Electronics, 2022, 28, 1-7.	2.9	6
78	3D RGB Non-Line-Of-Sight single-pixel imaging. , 2019, , .		5
79	CMOS SPAD pixels for indirect time-of-flight ranging. , 2012, , .		4
80	Figures of merit for CMOS SPADs and arrays. , 2013, , .		4
81	Dual channel timeâ€toâ€digital converter module with 10 ps resolution and 320Âns full scale range. Electronics Letters, 2015, 51, 994-996.	1.0	4
82	Low-power 20-meter 3D ranging SPAD camera based on continuous-wave indirect time-of-flight. , 2012, , .		3
83	Monolithic time-to-digital converter chips for time-correlated single-photon counting and fluorescence lifetime measurements. Proceedings of SPIE, 2013, , .	0.8	3
84	Non-Contact Inclusion Detection in Food Through a Single-Photon Time-of-Flight Imager. IEEE Sensors Journal, 2017, 17, 78-83.	4.7	3
85	A 20 A Sub-Nanosecond Integrated CMOS Laser Diode Driver for High Repetition Rate SPAD-Based Direct Time-of-Flight Measurements. , 2018, , .		3
86	Low-noise CMOS SPAD arrays with in-pixel time-to-digital converters. , 2014, , .		2
87	Enhancing the fill-factor of CMOS SPAD arrays using microlens integration. Proceedings of SPIE, 2015, , .	0.8	2
88	Time-resolved CMOS SPAD arrays: architectures, applications and perspectives. , 2017, , .		2
89	3D SPAD camera for Advanced Driver Assistance. , 2017, , .		2
90	SPADs and TDCs for photon-counting, timing and gated-imaging at 30 ps resolution and 60% efficiency. , 2018, , .		2

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91	Remote PhotoPlethysmoGraphy Using SPAD Camera for Automotive Health Monitoring Application. , 2019, , .		2
92	Protective Measurementâ€"A New Quantum Measurement Paradigm: Detailed Description of the First Realization. Applied Sciences (Switzerland), 2021, 11, 4260.	2.5	2
93	0.16 Âµm BCD single-photon avalanche diode with 30 ps timing jitter, high detection efficiency and low noise. , 2018, , .		2
94	Time-gated SPAD camera with reconfigurable macropixels for LIDAR applications. , 2019, , .		2
95	Microelectronic 3D Imaging and Neuromorphic Recognition for Autonomous UAVs. NATO Science for Peace and Security Series B: Physics and Biophysics, 2020, , 185-194.	0.3	2
96	Fast Skin Segmentation on Low-Resolution Grayscale Images for Remote PhotoPlethysmoGraphy. IEEE MultiMedia, 2022, 29, 28-35.	1.7	2
97	Effects of pedaling on the high frequency components of HRV during exercise. , 2008, , .		1
98	15bit Time-to-Digital Converters with 0.9% DNL<inf>rms</inf> and 160ns FSR for single-photon imagers. , 2011, , .		1
99	SPAD detector for long-distance 3D ranging with sub-nanosecond TDC. , 2012, , .		1
100	3D sensor for indirect ranging with pulsed laser source. Proceedings of SPIE, 2012, , .	0.8	1
101	TDC with 1.5% DNL based on a single-stage vernier delay-loop fine interpolation. , 2013, , .		1
102	High linearity SPAD and TDC array for TCSPC and 3D ranging applications. Proceedings of SPIE, 2015, , .	0.8	1
103	SPADAS: a high-speed 3D single-photon camera for advanced driver assistance systems. , 2015, , .		1
104	Miniaturized 64-channel single-photon timing system. , 2017, , .		1
105	Time-gated 128x1 and 8x8 SPAD cameras for 2D photon-counting and 3D time-of-flight maps. , 2021, , .		1
106	Image scanning microscopy (ISM) with a single photon avalanche diode (SPAD) array detector. , 2018, , .		1
107	Time-gated CMOS SPAD array in 0.16 Âµm BCD with shared timing electronics and background light rejection for LIDAR applications. , 2018, , .		1
108	SPAD 3D LiDAR sensors for automotive, industrial automation and surveillance. , 2021, , .		1

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109	Historical Perspectives, State of art and Research Trends of Single Photon Avalanche Diodes and Their Applications (Part 1: Single Pixels). Frontiers in Physics, 0, 10, .	2.1	1
110	Single-chip time-to-digital converter with 10 ps resolution, 160 ns dynamic range, and 1% LSB DNL. , 2012, , .		0
111	Correction to â€œSPAD Smart Pixel for Time-of-Flight and Time-Correlated Single-Photon Counting Measurementsâ€•[Jun 12 795-804]. IEEE Photonics Journal, 2012, 4, 1027-1027.	2.0	0
112	A compact Time-to-Digital Converter (TDC) module with 10 ps resolution and less than 1.5% LSB DNL. , 2012, , .		0
113	Fully CMOS analog and digital SiPMs. Proceedings of SPIE, 2015, , .	0.8	0
114	ALART: a novel lidar system for vegetation height retrieval from space. Proceedings of SPIE, 2015, , .	0.8	0
115	Hyper-hemispheric lens distortion model for 3D-imaging SPAD-array-based applications. , 2015, , .		0
116	Weak measurements: From measuring incompatible observables and testing quantum contextuality to protective measurements. , 2017, , .		0
117	High-Speed Low-Power 4 Channel Laser Diode Driver for Pico-Projector Application. , 2018, , .		0
118	Analysis of a quantum imaging system based on SPAD detection. , 2021, , .		0
119	Enhanced Quantum Imaging SPAD arrays. , 2021, , .		0
120	A new method utilizing novel single-photon avalanche diode arrays for multi-exposure laser speckle flowmetry. , 2016, , .		0
121	Short-gate techniques for high-speed photon counting with InGaAs/InP SPADs. , 2016, , .		0
122	Latest developments in speckle contrast optical tomography (SCOT) for deep tissue blood flow imaging. , 2016, , .		0
123	Compact, Low Power Consumption and Low cost Multi-exposure Speckle Contrast Optical Spectroscopy (SCOS) device for Real-time Measurement of Deep Tissue Blood Flow. , 2018, , .		0
124	Protective measurements: extracting the expectation value by measuring a single particle. , 2018, , .		0
125	Quantum weak-interaction-based measurement: from sequential weak measurement to protective measurement. , 2018, , .		0
126	Wearable, low-cost device for monitoring cerebral blood flow with speckle contrast optical spectroscopy. , 2020, , .		0

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127	Obtaining Images by Measuring Time. Optics and Photonics News, 2020, 31, 50.	0.5	0
128	Linear SPAD array single- and multiple-photon coincidence- based Quantum Random Number Generator. , 2021, , .		0
129	Multi-photon coincidence-detection SPAD array for super-resolution microscopy. , 2021, , .		0
130	32Ã—32 SPAD camera for 2D photon-counting and 3D time-of-flight ranging. , 2021, , .		0
131	Towards low timing jitter photon number-resolved Digital Silicon Photomultiplier. , 2021, , .		0
132	SPAD Sensors for Time-Gated Raman Spectroscopy. , 2022, , .		0