

# Domitilla Del Vecchio

## List of Publications by Year in descending order

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109  
papers

3,973  
citations

186209

28  
h-index

161767

54  
g-index

125  
all docs

125  
docs citations

125  
times ranked

2309  
citing authors

#	ARTICLE	IF	CITATIONS
1	Robust and tunable signal processing in mammalian cells via engineered covalent modification cycles. Nature Communications, 2022, 13, 1720.	5.8	14
2	Epigenetic cell memory: The gene's inner chromatin modification circuit. PLoS Computational Biology, 2022, 18, e1009961.	1.5	23
3	Squaring a Circle: To What Extent Are Traditional Circuit Analogies Impeding Synthetic Biology?. , 2022, 1, 150-155.		9
4	What Is the Trait's Union between Retroactivity and Molecular Communication Performance Limits?. Molecules, 2022, 27, 3130.	1.7	1
5	Robustness of Networked Systems to Unintended Interactions With Application to Engineered Genetic Circuits. IEEE Transactions on Control of Network Systems, 2021, 8, 1705-1716.	2.4	4
6	Synthetic Biology. , 2021, , 2275-2282.		0
7	dCas9 regulator to neutralize competition in CRISPRi circuits. Nature Communications, 2021, 12, 1692.	5.8	22
8	Context-aware synthetic biology by controller design: Engineering the mammalian cell. Cell Systems, 2021, 12, 561-592.	2.9	37
9	Design of genetic circuits that are robust to resource competition. Current Opinion in Systems Biology, 2021, 28, 100357.	1.3	22
10	Predicting Composition of Genetic Circuits with Resource Competition: Demand and Sensitivity. ACS Synthetic Biology, 2021, 10, 3330-3342.	1.9	11
11	Modular Analysis and Design of Biological Circuits. Current Opinion in Biotechnology, 2020, 63, 41-47.	3.3	40
12	The number of equilibrium points of perturbed nonlinear positive dynamical systems. Automatica, 2020, 112, 108732.	3.0	10
13	An endoribonuclease-based feedforward controller for decoupling resource-limited genetic modules in mammalian cells. Nature Communications, 2020, 11, 5690.	5.8	65
14	Reprogramming Multistable Monotone Systems With Application to Cell Fate Control. IEEE Transactions on Network Science and Engineering, 2020, 7, 2940-2951.	4.1	2
15	Effects of spatial heterogeneity on bacterial genetic circuits. PLoS Computational Biology, 2020, 16, e1008159.	1.5	3
16	Trade-offs in Robustness to Perturbations of Bacterial Population Controllers*. , 2020, , .		1
17	Synthetic Biology. , 2020, , 1-8.		0
18	The impact of retroactivity on information exchange in molecular communications. , 2020, , .		1

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19	Deterministic-Like Model Reduction for a Class of Multiscale Stochastic Differential Equations With Application to Biomolecular Systems. IEEE Transactions on Automatic Control, 2019, 64, 351-358.	3.6	6
20	A Singular Singular Perturbation Problem Arising From a Class of Biomolecular Feedback Controllers. , 2019, 3, 236-241.		10
21	The Effect of Loads in Molecular Communications. Proceedings of the IEEE, 2019, 107, 1369-1386.	16.4	14
22	Computational Analysis of Altering Cell Fate. Methods in Molecular Biology, 2019, 1975, 363-405.	0.4	2
23	Multi-modality in gene regulatory networks with slow promoter kinetics. PLoS Computational Biology, 2019, 15, e1006784.	1.5	29
24	Stochastic analysis of genetic feedback controllers to reprogram a pluripotency gene regulatory network. , 2019, 2019, 5089-5096.		3
25	Time-scale separation based design of biomolecular feedback controllers. , 2019, , .		3
26	Genetic Circuit-Host Ribosome Transactions: Diffusion-Reaction Model. , 2019, , .		0
27	Approximation of the Chemical Master Equation using conditional moment closure and time-scale separation. , 2019, , .		2
28	Programming Cells to Work for Us. Annual Review of Control, Robotics, and Autonomous Systems, 2018, 1, 411-440.	7.5	32
29	Realizing "integral control" in living cells: how to overcome leaky integration due to dilution?. Journal of the Royal Society Interface, 2018, 15, 20170902.	1.5	94
30	Safety Verification and Control for Collision Avoidance at Road Intersections. IEEE Transactions on Automatic Control, 2018, 63, 630-642.	3.6	49
31	Resource Sensor Design for Quantifying Resource Competition in Genetic Circuits. , 2018, , .		4
32	A Model for Resource Competition in CRISPR-Mediated Gene Repression. , 2018, , .		13
33	Stochastic multistationarity in a model of the hematopoietic stem cell differentiation network. , 2018, 2018, 1886-1892.		2
34	Reprogramming Cooperative Monotone Dynamical Systems Behaviors. , 2018, 2018, 6938-6944.		2
35	A quasi-integral controller for adaptation of genetic modules to variable ribosome demand. Nature Communications, 2018, 9, 5415.	5.8	107
36	Reduced linear noise approximation for biochemical reaction networks with time-scale separation: The stochastic tqSSA+. Journal of Chemical Physics, 2018, 148, 094108.	1.2	14

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37	Future systems and control research in synthetic biology. Annual Reviews in Control, 2018, 45, 5-17.	4.4	65
38	Multi-time-scale biomolecular "quasi-integral"™ controllers for set-point regulation and trajectory tracking. , 2018, , .		3
39	A Blueprint for a Synthetic Genetic Feedback Controller to Reprogram Cell Fate. Cell Systems, 2017, 4, 109-120.e11.	2.9	65
40	Resource Competition Shapes the Response of Genetic Circuits. ACS Synthetic Biology, 2017, 6, 1263-1272.	1.9	207
41	Biophysical Constraints Arising from Compositional Context in Synthetic Gene Networks. Cell Systems, 2017, 5, 11-24.e12.	2.9	120
42	Signaling Architectures that Transmit Unidirectional Information Despite Retroactivity. Biophysical Journal, 2017, 113, 728-742.	0.2	10
43	Analyzing and Exploiting the Effects of Protease Sharing in Genetic Circuits * *This work was supported by AFOSR grant number FA9550-14-1-0060 and NSF Expeditions in Computing award number 1521925.. IFAC-PapersOnLine, 2017, 50, 10924-10931.	0.5	4
44	Design of a lane departure driver-assist system under safety specifications. , 2016, , .		13
45	Controller design under safety specifications for a class of bounded hybrid automata. , 2016, , .		0
46	A dynamical model for the low efficiency of induced pluripotent stem cell reprogramming. , 2016, , .		2
47	Mitigation of ribosome competition through distributed sRNA feedback. , 2016, , .		18
48	Model order reduction for Linear Noise Approximation using time-scale separation. , 2016, , .		4
49	Model reduction for a class of singularly perturbed stochastic differential equations: Fast variable approximation. , 2016, , .		1
50	Control theory meets synthetic biology. Journal of the Royal Society Interface, 2016, 13, 20160380.	1.5	214
51	Creating Single-Copy Genetic Circuits. Molecular Cell, 2016, 63, 329-336.	4.5	62
52	An N-stage cascade of phosphorylation cycles as an insulation device for synthetic biological circuits. , 2016, , .		2
53	Loading as a design parameter for genetic circuits. , 2016, , .		3
54	Design of Driver-Assist Systems Under Probabilistic Safety Specifications Near Stop Signs. IEEE Transactions on Automation Science and Engineering, 2016, 13, 43-53.	3.4	11

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55	A contraction approach to input tracking via high gain feedback. , 2015, , .		4
56	Least Restrictive Supervisors for Intersection Collision Avoidance: A Scheduling Approach. IEEE Transactions on Automatic Control, 2015, 60, 1515-1527.	3.6	104
57	Effective interaction graphs arising from resource limitations in gene networks. , 2015, , .		13
58	How retroactivity impacts the robustness of genetic networks. , 2015, , .		2
59	Model reduction for a class of singularly perturbed stochastic differential equations. , 2015, , .		5
60	Isocost Lines Describe the Cellular Economy of Genetic Circuits. Biophysical Journal, 2015, 109, 639-646.	0.2	227
61	Modularity, context-dependence, and insulation in engineered biological circuits. Trends in Biotechnology, 2015, 33, 111-119.	4.9	114
62	Stochastic hybrid models for predicting the behavior of drivers facing the yellow-light-dilemma. , 2015, , .		7
63	Estimation for decentralized safety control under communication delay and measurement uncertainty. Automatica, 2015, 62, 292-303.	3.0	9
64	Synthetic Tunable Amplifying Buffer Circuit in <i>E. coli</i> . ACS Synthetic Biology, 2015, 4, 577-584.	1.9	43
65	Modular Composition of Gene Transcription Networks. PLoS Computational Biology, 2014, 10, e1003486.	1.5	58
66	Mitigation of resource competition in synthetic genetic circuits through feedback regulation. , 2014, , .		20
67	Limitations and trade-offs in gene expression due to competition for shared cellular resources. , 2014, , .		33
68	A load driver device for engineering modularity in biological networks. Nature Biotechnology, 2014, 32, 1268-1275.	9.4	150
69	Control for Safety Specifications of Systems With Imperfect Information on a Partial Order. IEEE Transactions on Automatic Control, 2014, 59, 982-995.	3.6	18
70	Integral action with time scale separation: A mechanism for modularity in biological systems. , 2014, , .		7
71	A Contraction Theory Approach to Singularly Perturbed Systems. IEEE Transactions on Automatic Control, 2013, 58, 752-757.	3.6	53
72	Retroactivity Controls the Temporal Dynamics of Gene Transcription. ACS Synthetic Biology, 2013, 2, 431-441.	1.9	143

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73	A control theoretic framework for modular analysis and design of biomolecular networks. Annual Reviews in Control, 2013, 37, 333-345.	4.4	23
74	Optimal design of phosphorylation-based insulation devices. , 2013, , .		5
75	How slaves affect a master module in gene transcription networks. , 2013, , .		3
76	Cooperative Collision Avoidance at Intersections: Algorithms and Experiments. IEEE Transactions on Intelligent Transportation Systems, 2013, 14, 1162-1175.	4.7	253
77	Robust multi-agent collision avoidance through scheduling. , 2013, , .		35
78	Modularity in signaling systems. Physical Biology, 2012, 9, 045008.	0.8	4
79	Stochastic analysis of retroactivity in transcriptional networks through singular perturbation. , 2012, , .		7
80	Retroactivity to the input in complex gene transcription networks. , 2012, , .		9
81	Response to Comment on "Load-Induced Modulation of Signal Transduction Networks": Reconciling Ultrasensitivity with Bifunctionality? Science Signaling, 2012, 5, .	1.6	0
82	Safety Control of Hidden Mode Hybrid Systems. IEEE Transactions on Automatic Control, 2012, 57, 62-77.	3.6	31
83	Tuning Genetic Clocks Employing DNA Binding Sites. PLoS ONE, 2012, 7, e41019.	1.1	31
84	Retroactivity attenuation in signaling cascades. , 2011, , .		0
85	Retroactivity Attenuation in Bio-Molecular Systems Based on Timescale Separation. IEEE Transactions on Automatic Control, 2011, 56, 748-761.	3.6	68
86	Long Signaling Cascades Tend to Attenuate Retroactivity. Biophysical Journal, 2011, 100, 1617-1626.	0.2	37
87	Semiautonomous Multivehicle Safety. IEEE Robotics and Automation Magazine, 2011, 18, 44-54.	2.2	40
88	Control of Hidden Mode Hybrid Systems: Algorithm termination. , 2011, , .		0
89	Supervisory control of differentially flat systems based on abstraction. , 2011, , .		20
90	A contraction theory approach to singularly perturbed systems with application to retroactivity attenuation. , 2011, , .		7

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91	Load-Induced Modulation of Signal Transduction Networks. <i>Science Signaling</i> , 2011, 4, ra67.	1.6	64
92	Tuning an activator-repressor clock employing retroactivity. , 2011, , .		4
93	Development and experimental validation of a semi-autonomous cooperative active safety system. , 2011, , .		2
94	Engineering insulation from retroactivity of the frequency response of covalent modification cycles. , 2011, , .		0
95	Safety control of piece-wise continuous order preserving systems. , 2011, , .		3
96	Design of an insulation device using phosphotransfer systems. , 2010, , .		0
97	Control of hybrid automata with hidden modes: Translation to a perfect state information problem. , 2010, , .		7
98	Signaling properties of a covalent modification cycle are altered by a downstream target. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2010, 107, 10032-10037.	3.3	76
99	The effect of retroactivity on the transfer function of a phosphorylation system. , 2010, , .		0
100	On the compromise between retroactivity attenuation and noise amplification in gene regulatory networks. , 2009, , .		16
101	Design of insulating devices for in vitro synthetic circuits. , 2009, , .		7
102	Engineering principles in bio-molecular systems: From retroactivity to modularity. , 2009, , .		1
103	Development of a Scaled Vehicle With Longitudinal Dynamics of an HMMWV for an ITS Testbed. <i>IEEE/ASME Transactions on Mechatronics</i> , 2008, 13, 46-57.	3.7	63
104	Retroactivity attenuation in transcriptional networks: Design and analysis of an insulation device. , 2008, , .		10
105	Modular cell biology: retroactivity and insulation. <i>Molecular Systems Biology</i> , 2008, 4, 161.	3.2	454
106	Evaluating the robustness of a biochemical network model. , 2007, , .		3
107	Systems biology and control &#x2014; A tutorial. , 2007, , .		2
108	Discrete dynamic feedback for a class of hybrid systems on a lattice. , 2006, , .		1

#	ARTICLE	IF	CITATIONS
109	Complexity Management in the State Estimation of Multi-Agent Systems. , 0, , 377-407.		1