

Domitilla Del Vecchio

List of Publications by Year in descending order

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Version: 2024-02-01

109
papers

3,973
citations

185998

28
h-index

161609

54
g-index

125
all docs

125
docs citations

125
times ranked

2309
citing authors

#	ARTICLE	IF	CITATIONS
1	Modular cell biology: retroactivity and insulation. <i>Molecular Systems Biology</i> , 2008, 4, 161.	3.2	454
2	Cooperative Collision Avoidance at Intersections: Algorithms and Experiments. <i>IEEE Transactions on Intelligent Transportation Systems</i> , 2013, 14, 1162-1175.	4.7	253
3	Isocost Lines Describe the Cellular Economy of Genetic Circuits. <i>Biophysical Journal</i> , 2015, 109, 639-646.	0.2	227
4	Control theory meets synthetic biology. <i>Journal of the Royal Society Interface</i> , 2016, 13, 20160380.	1.5	214
5	Resource Competition Shapes the Response of Genetic Circuits. <i>ACS Synthetic Biology</i> , 2017, 6, 1263-1272.	1.9	207
6	A load driver device for engineering modularity in biological networks. <i>Nature Biotechnology</i> , 2014, 32, 1268-1275.	9.4	150
7	Retroactivity Controls the Temporal Dynamics of Gene Transcription. <i>ACS Synthetic Biology</i> , 2013, 2, 431-441.	1.9	143
8	Biophysical Constraints Arising from Compositional Context in Synthetic Gene Networks. <i>Cell Systems</i> , 2017, 5, 11-24.e12.	2.9	120
9	Modularity, context-dependence, and insulation in engineered biological circuits. <i>Trends in Biotechnology</i> , 2015, 33, 111-119.	4.9	114
10	A quasi-integral controller for adaptation of genetic modules to variable ribosome demand. <i>Nature Communications</i> , 2018, 9, 5415.	5.8	107
11	Least Restrictive Supervisors for Intersection Collision Avoidance: A Scheduling Approach. <i>IEEE Transactions on Automatic Control</i> , 2015, 60, 1515-1527.	3.6	104
12	Realizing "integral control"™ in living cells: how to overcome leaky integration due to dilution?. <i>Journal of the Royal Society Interface</i> , 2018, 15, 20170902.	1.5	94
13	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
14	Retroactivity Attenuation in Bio-Molecular Systems Based on Timescale Separation. <i>IEEE Transactions on Automatic Control</i> , 2011, 56, 748-761.	3.6	68
15	A Blueprint for a Synthetic Genetic Feedback Controller to Reprogram Cell Fate. <i>Cell Systems</i> , 2017, 4, 109-120.e11.	2.9	65
16	Future systems and control research in synthetic biology. <i>Annual Reviews in Control</i> , 2018, 45, 5-17.	4.4	65
17	An endoribonuclease-based feedforward controller for decoupling resource-limited genetic modules in mammalian cells. <i>Nature Communications</i> , 2020, 11, 5690.	5.8	65
18	Load-Induced Modulation of Signal Transduction Networks. <i>Science Signaling</i> , 2011, 4, ra67.	1.6	64

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19	Development of a Scaled Vehicle With Longitudinal Dynamics of an HMMWV for an ITS Testbed. IEEE/ASME Transactions on Mechatronics, 2008, 13, 46-57.	3.7	63
20	Creating Single-Copy Genetic Circuits. Molecular Cell, 2016, 63, 329-336.	4.5	62
21	Modular Composition of Gene Transcription Networks. PLoS Computational Biology, 2014, 10, e1003486.	1.5	58
22	A Contraction Theory Approach to Singularly Perturbed Systems. IEEE Transactions on Automatic Control, 2013, 58, 752-757.	3.6	53
23	Safety Verification and Control for Collision Avoidance at Road Intersections. IEEE Transactions on Automatic Control, 2018, 63, 630-642.	3.6	49
24	Synthetic Tunable Amplifying Buffer Circuit in <i>E. coli</i> . ACS Synthetic Biology, 2015, 4, 577-584.	1.9	43
25	Semiautonomous Multivehicle Safety. IEEE Robotics and Automation Magazine, 2011, 18, 44-54.	2.2	40
26	Modular Analysis and Design of Biological Circuits. Current Opinion in Biotechnology, 2020, 63, 41-47.	3.3	40
27	Long Signaling Cascades Tend to Attenuate Retroactivity. Biophysical Journal, 2011, 100, 1617-1626.	0.2	37
28	Context-aware synthetic biology by controller design: Engineering the mammalian cell. Cell Systems, 2021, 12, 561-592.	2.9	37
29	Robust multi-agent collision avoidance through scheduling. , 2013, , .		35
30	Limitations and trade-offs in gene expression due to competition for shared cellular resources. , 2014, , .		33
31	Programming Cells to Work for Us. Annual Review of Control, Robotics, and Autonomous Systems, 2018, 1, 411-440.	7.5	32
32	Safety Control of Hidden Mode Hybrid Systems. IEEE Transactions on Automatic Control, 2012, 57, 62-77.	3.6	31
33	Tuning Genetic Clocks Employing DNA Binding Sites. PLoS ONE, 2012, 7, e41019.	1.1	31
34	Multi-modality in gene regulatory networks with slow promoter kinetics. PLoS Computational Biology, 2019, 15, e1006784.	1.5	29
35	A control theoretic framework for modular analysis and design of biomolecular networks. Annual Reviews in Control, 2013, 37, 333-345.	4.4	23
36	Epigenetic cell memory: The gene's inner chromatin modification circuit. PLoS Computational Biology, 2022, 18, e1009961.	1.5	23

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37	dCas9 regulator to neutralize competition in CRISPRi circuits. Nature Communications, 2021, 12, 1692.	5.8	22
38	Design of genetic circuits that are robust to resource competition. Current Opinion in Systems Biology, 2021, 28, 100357.	1.3	22
39	Supervisory control of differentially flat systems based on abstraction. , 2011, , .		20
40	Mitigation of resource competition in synthetic genetic circuits through feedback regulation. , 2014, , .		20
41	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
42	Mitigation of ribosome competition through distributed sRNA feedback. , 2016, , .		18
43	On the compromise between retroactivity attenuation and noise amplification in gene regulatory networks. , 2009, , .		16
44	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
45	The Effect of Loads in Molecular Communications. Proceedings of the IEEE, 2019, 107, 1369-1386.	16.4	14
46	Robust and tunable signal processing in mammalian cells via engineered covalent modification cycles. Nature Communications, 2022, 13, 1720.	5.8	14
47	Effective interaction graphs arising from resource limitations in gene networks. , 2015, , .		13
48	Design of a lane departure driver-assist system under safety specifications. , 2016, , .		13
49	A Model for Resource Competition in CRISPR-Mediated Gene Repression. , 2018, , .		13
50	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
51	Predicting Composition of Genetic Circuits with Resource Competition: Demand and Sensitivity. ACS Synthetic Biology, 2021, 10, 3330-3342.	1.9	11
52	Retroactivity attenuation in transcriptional networks: Design and analysis of an insulation device. , 2008, , .		10
53	Signaling Architectures that Transmit Unidirectional Information Despite Retroactivity. Biophysical Journal, 2017, 113, 728-742.	0.2	10
54	A Singular Singular Perturbation Problem Arising From a Class of Biomolecular Feedback Controllers. , 2019, 3, 236-241.		10

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55	The number of equilibrium points of perturbed nonlinear positive dynamical systems. Automatica, 2020, 112, 108732.	3.0	10
56	Retroactivity to the input in complex gene transcription networks. , 2012, , .		9
57	Estimation for decentralized safety control under communication delay and measurement uncertainty. Automatica, 2015, 62, 292-303.	3.0	9
58	Squaring a Circle: To What Extent Are Traditional Circuit Analogies Impeding Synthetic Biology?. , 2022, 1, 150-155.		9
59	Design of insulating devices for in vitro synthetic circuits. , 2009, , .		7
60	Control of hybrid automata with hidden modes: Translation to a perfect state information problem. , 2010, , .		7
61	A contraction theory approach to singularly perturbed systems with application to retroactivity attenuation. , 2011, , .		7
62	Stochastic analysis of retroactivity in transcriptional networks through singular perturbation. , 2012, , .		7
63	Integral action with time scale separation: A mechanism for modularity in biological systems. , 2014, , .		7
64	Stochastic hybrid models for predicting the behavior of drivers facing the yellow-light-dilemma. , 2015, , .		7
65	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
66	Optimal design of phosphorylation-based insulation devices. , 2013, , .		5
67	Model reduction for a class of singularly perturbed stochastic differential equations. , 2015, , .		5
68	Tuning an activator-repressor clock employing retroactivity. , 2011, , .		4
69	Modularity in signaling systems. Physical Biology, 2012, 9, 045008.	0.8	4
70	A contraction approach to input tracking via high gain feedback. , 2015, , .		4
71	Model order reduction for Linear Noise Approximation using time-scale separation. , 2016, , .		4
72	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

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73	Resource Sensor Design for Quantifying Resource Competition in Genetic Circuits. , 2018, , .		4
74	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
75	Evaluating the robustness of a biochemical network model. , 2007, , .		3
76	Safety control of piece-wise continuous order preserving systems. , 2011, , .		3
77	How slaves affect a master module in gene transcription networks. , 2013, , .		3
78	Loading as a design parameter for genetic circuits. , 2016, , .		3
79	Multi-time-scale biomolecular "quasi-integral"™ controllers for set-point regulation and trajectory tracking. , 2018, , .		3
80	Stochastic analysis of genetic feedback controllers to reprogram a pluripotency gene regulatory network. , 2019, 2019, 5089-5096.		3
81	Time-scale separation based design of biomolecular feedback controllers. , 2019, , .		3
82	Effects of spatial heterogeneity on bacterial genetic circuits. PLoS Computational Biology, 2020, 16, e1008159.	1.5	3
83	Systems biology and control — A tutorial. , 2007, , .		2
84	Development and experimental validation of a semi-autonomous cooperative active safety system. , 2011, , .		2
85	How retroactivity impacts the robustness of genetic networks. , 2015, , .		2
86	A dynamical model for the low efficiency of induced pluripotent stem cell reprogramming. , 2016, , .		2
87	An N-stage cascade of phosphorylation cycles as an insulation device for synthetic biological circuits. , 2016, , .		2
88	Stochastic multistationarity in a model of the hematopoietic stem cell differentiation network. , 2018, 2018, 1886-1892.		2
89	Reprogramming Cooperative Monotone Dynamical Systems Behaviors. , 2018, 2018, 6938-6944.		2
90	Computational Analysis of Altering Cell Fate. Methods in Molecular Biology, 2019, 1975, 363-405.	0.4	2

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91	Reprogramming Multistable Monotone Systems With Application to Cell Fate Control. IEEE Transactions on Network Science and Engineering, 2020, 7, 2940-2951.	4.1	2
92	Approximation of the Chemical Master Equation using conditional moment closure and time-scale separation. , 2019, , .		2
93	Discrete dynamic feedback for a class of hybrid systems on a lattice. , 2006, , .		1
94	Model reduction for a class of singularly perturbed stochastic differential equations: Fast variable approximation. , 2016, , .		1
95	Trade-offs in Robustness to Perturbations of Bacterial Population Controllers*. , 2020, , .		1
96	Complexity Management in the State Estimation of Multi-Agent Systems. , 0, , 377-407.		1
97	Engineering principles in bio-molecular systems: From retroactivity to modularity. , 2009, , .		1
98	The impact of retroactivity on information exchange in molecular communications. , 2020, , .		1
99	What Is the Trait dâ€™Union between Retroactivity and Molecular Communication Performance Limits?. Molecules, 2022, 27, 3130.	1.7	1
100	Design of an insulation device using phosphotransfer systems. , 2010, , .		0
101	The effect of retroactivity on the transfer function of a phosphorylation system. , 2010, , .		0
102	Retroactivity attenuation in signaling cascades. , 2011, , .		0
103	Control of Hidden Mode Hybrid Systems: Algorithm termination. , 2011, , .		0
104	Engineering insulation from retroactivity of the frequency response of covalent modification cycles. , 2011, , .		0
105	Response to Comment on "Load-Induced Modulation of Signal Transduction Networks": Reconciling Ultrasensitivity with Bifunctionality? Science Signaling, 2012, 5, .	1.6	0
106	Controller design under safety specifications for a class of bounded hybrid automata. , 2016, , .		0
107	Genetic Circuit-Host Ribosome Transactions: Diffusion-Reaction Model. , 2019, , .		0
108	Synthetic Biology. , 2021, , 2275-2282.		0

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109	Synthetic Biology. , 2020, , 1-8.		0