# Maurice J Chacron

List of Publications by Year
in descending order



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|---|---|---|---|
| 116 papers | 4,487 citations | 94269 37 h-index | 118652 62 g-index |
| 127 all docs | 127 docs citations | 127 times ranked | 1414 citing authors |

| # | Article | IF | Citations |
|---|---|---|---|
| 1 | Neural Variability, Detection Thresholds, and Information Transmission in the Vestibular System. Journal of Neuroscience, 2007, 27, 771-781. | 1.7 | 217 |
| 2 | Negative Interspike Interval Correlations Increase the Neuronal Capacity for Encoding Time-Dependent Stimuli. Journal of Neuroscience, 2001, 21, 5328-5343. | 1.7 | 191 |
| 3 | Parallel Processing of Sensory Input by Bursts and Isolated Spikes. Journal of Neuroscience, 2004, 24, 4351-4362. | 1.7 | 179 |
| 4 | Non-classical receptive field mediates switch in a sensory neuron's frequency tuning. Nature, 2003, 423, 77-81. | 13.7 | 168 |
| 5 | Inhibitory feedback required for network oscillatory responses to communication but not prey stimuli. Nature, 2003, 421, 539-543. | 13.7 | 152 |
| 6 | Plastic and Nonplastic Pyramidal Cells Perform Unique Roles in a Network Capable of Adaptive Redundancy Reduction. Neuron, 2004, 41, 767-779. | 3.8 | 130 |
| 7 | Receptive Field Organization Determines Pyramidal Cell Stimulus-Encoding Capability and Spatial Stimulus Selectivity. Journal of Neuroscience, 2002, 22, 4577-4590. | 1.7 | 114 |
| 8 | Noise Shaping by Interval Correlations Increases Information Transfer. Physical Review Letters, 2004, 92, 080601. | 2.9 | 111 |
| 9 | Suprathreshold Stochastic Firing Dynamics with Memory inP-Type Electroreceptors. Physical Review Letters, 2000, 85, 1576-1579. | 2.9 | 110 |
| 10 | Electroreceptor neuron dynamics shape information transmission. Nature Neuroscience, 2005, 8, 673-678. | 7.1 | 110 |
| 11 | Temporal Processing Across Multiple Topographic Maps in the Electrosensory System. Journal of Neurophysiology, 2008, 100, 852-867. | 0.9 | 102 |
| 12 | Statistics of the Vestibular Input Experienced during Natural Self-Motion: Implications for Neural Processing. Journal of Neuroscience, 2014, 34, 8347-8357. | 1.7 | 98 |
| 13 | Serotonin selectively enhances perception and sensory neural responses to stimuli generated by same-sex conspecifics. Proceedings of the National Academy of Sciences of the United States of America, 2013, 110, 19609-19614. | 3.3 | 87 |
| 14 | Interspike Interval Correlations, Memory, Adaptation, and Refractoriness in a Leaky Integrate-and-Fire Model with Threshold Fatigue. Neural Computation, 2003, 15, 253-278. | 1.3 | 86 |
| 15 | Efficient computation via sparse coding in electrosensory neural networks. Current Opinion in Neurobiology, 2011, 21, 752-760. | 2.0 | 84 |
| 16 | Nonlinear Information Processing in a Model Sensory System. Journal of Neurophysiology, 2006, 95, 2933-2946. | 0.9 | 83 |
| 17 | Feedback and Feedforward Control of Frequency Tuning to Naturalistic Stimuli. Journal of Neuroscience, 2005, 25, 5521-5532. | 1.7 | 81 |
| 18 | Population Coding by Electrosensory Neurons. Journal of Neurophysiology, 2008, 99, 1825-1835. | 0.9 | 79 |

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|---|---|---|---|
| 19 | Integrate-and-fire neurons with threshold noise: A tractable model of how interspike interval correlations affect neuronal signal transmission. Physical Review E, 2005, 72, 021911. | 0.8 | 77 |
| 20 | Effects of Restraint and Immobilization on Electrosensory Behaviors of Weakly Electric Fish. ILAR Journal, 2009, 50, 361-372. | 1.8 | 73 |
| 21 | Sparse and dense coding of natural stimuli by distinct midbrain neuron subpopulations in weakly electric fish. Journal of Neurophysiology, 2011, 106, 3102-3118. | 0.9 | 67 |
| 22 | Information transmission and detection thresholds in the vestibular nuclei: single neurons vs. population encoding. Journal of Neurophysiology, 2011, 105, 1798-1814. | 0.9 | 66 |
| 23 | The statistics of the vestibular input experienced during natural selfâ€motion differ between rodents and primates. Journal of Physiology, 2017, 595, 2751-2766. | 1.3 | 62 |
| 24 | Nonrenewal spike train statistics: causes and functional consequences on neural coding. Experimental Brain Research, 2011, 210, 353-371. | 0.7 | 61 |
| 25 | Parallel Coding of First- and Second-Order Stimulus Attributes by Midbrain Electrosensory Neurons. Journal of Neuroscience, 2012, 32, 5510-5524. | 1.7 | 61 |
| 26 | Threshold fatigue and information transfer. Journal of Computational Neuroscience, 2007, 23, 301-311. | 0.6 | 58 |
| 27 | Neural heterogeneities influence envelope and temporal coding at the sensory periphery. Neuroscience, 2011, 172, 270-284. | 1.1 | 55 |
| 28 | SK Channels Gate Information Processing In Vivo by Regulating an Intrinsic Bursting Mechanism Seen In Vitro. Journal of Neurophysiology, 2009, 102, 2273-2287. | 0.9 | 52 |
| 29 | The Vestibular System Implements a Linearâ€"Nonlinear Transformation In Order to Encode Self-Motion. PLoS Biology, 2012, 10, e1001365. | 2.6 | 51 |
| 30 | Perception and coding of envelopes in weakly electric fishes. Journal of Experimental Biology, 2013, 216, 2393-2402. | 0.8 | 51 |
| 31 | Delayed excitatory and inhibitory feedback shape neural information transmission. Physical Review E, 2005, 72, 051917. | 0.8 | 49 |
| 32 | To Burst or Not to Burst?. Journal of Computational Neuroscience, 2004, 17, 127-136. | 0.6 | 44 |
| 33 | Neural heterogeneities and stimulus properties affect burst coding in vivo. Neuroscience, 2010, 168, 300-313. | 1.1 | 43 |
| 34 | The Increased Sensitivity of Irregular Peripheral Canal and Otolith Vestibular Afferents Optimizes their Encoding of Natural Stimuli. Journal of Neuroscience, 2015, 35, 5522-5536. | 1.7 | 41 |
| 35 | Differences in the Time Course of Short-Term Depression Across Receptive Fields Are Correlated With Directional Selectivity in Electrosensory Neurons. Journal of Neurophysiology, 2009, 102, 3270-3279. | 0.9 | 40 |
| 36 | Inhibition of SK and M channel-mediated currents by 5-HT enables parallel processing by bursts and isolated spikes. Journal of Neurophysiology, 2011, 105, 1276-1294. | 0.9 | 40 |

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|---|---|---|---|
| 37 | Weakly electric fish give behavioral responses to envelopes naturally occurring during movement: implications for neural processing. Journal of Experimental Biology, 2014, 217, 1381-91. | 0.8 | 40 |
| 38 | Coding of envelopes by correlated but not single-neuron activity requires neural variability. Proceedings of the National Academy of Sciences of the United States of America, 2015, 112, 4791-4796. | 3.3 | 40 |
| 39 | Temporal decorrelation by SK channels enables efficient neural coding and perception of natural stimuli. Nature Communications, 2016, 7, 11353. | 5.8 | 40 |
| 40 | Coding strategies in the otolith system differ for translational head motion vs. static orientation relative to gravity. ELife, 2019, 8, . | 2.8 | 39 |
| 41 | Strong Correlations between Sensitivity and Variability Give Rise to Constant Discrimination Thresholds across the Otolith Afferent Population. Journal of Neuroscience, 2013, 33, 11302-11313. | 1.7 | 38 |
| 42 | Neural correlations enable invariant coding and perception of natural stimuli in weakly electric fish. ELife, 2016, 5, . | 2.8 | 38 |
| 43 | Neural Heterogeneities Determine Response Characteristics to Second-, but Not First-Order Stimulus Features. Journal of Neuroscience, 2015, 35, 3124-3138. | 1.7 | 36 |
| 44 | Optimized Parallel Coding of Second-Order Stimulus Features by Heterogeneous Neural Populations. Journal of Neuroscience, 2016, 36, 9859-9872. | 1.7 | 36 |
| 45 | Self-motion evokes precise spike timing in the primate vestibular system. Nature Communications, 2016, 7, 13229. | 5.8 | 36 |
| 46 | Envelope statistics of self-motion signals experienced by human subjects during everyday activities: Implications for vestibular processing. PLoS ONE, 2017, 12, e0178664. | 1.1 | 36 |
| 47 | Muscarinic Receptors Control Frequency Tuning Through the Downregulation of an A-Type Potassium Current. Journal of Neurophysiology, 2007, 98, 1526-1537. | 0.9 | 35 |
| 48 | The effects of spontaneous activity, background noise, and the stimulus ensemble on information transfer in neurons. Network: Computation in Neural Systems, 2003, 14, 803-824. | 2.2 | 33 |
| 49 | Coding movement direction by burst firing in electrosensory neurons. Journal of Neurophysiology, 2011, 106, 1954-1968. | 0.9 | 31 |
| 50 | Descending pathways generate perception of and neural responses to weak sensory input. PLoS Biology, 2018, 16, e2005239. | 2.6 | 31 |
| 51 | The Spatial Structure of Stimuli Shapes the Timescale of Correlations in Population Spiking Activity. PLoS Computational Biology, 2012, 8, e1002667. | 1.5 | 30 |
| 52 | Neuromodulation of early electrosensory processing in gymnotiform weakly electric fish. Journal of Experimental Biology, 2013, 216, 2442-2450. | 0.8 | 30 |
| 53 | Ionic and neuromodulatory regulation of burst discharge controls frequency tuning. Journal of Physiology (Paris), 2008, 102, 195-208. | 2.1 | 29 |
| 54 | Subthreshold Membrane Conductances Enhance Directional Selectivity in Vertebrate Sensory Neurons. Journal of Neurophysiology, 2010, 104, 449-462. | 0.9 | 28 |

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|---|---|---|---|
| 55 | Neuronal variability and tuning are balanced to optimize naturalistic self-motion coding in primate vestibular pathways. ELife, 2018, 7, . | 2.8 | 28 |
| 56 | Chaotic firing in the sinusoidally forced leaky integrate-and-fire model with threshold fatigue. Physica D: Nonlinear Phenomena, 2004, 192, 138-160. | 1.3 | 27 |
| 57 | Electrosensory Midbrain Neurons Display Feature Invariant Responses to Natural Communication Stimuli. PLoS Computational Biology, 2015, 11, e1004430. | 1.5 | 26 |
| 58 | Activation of Parallel Fiber Feedback by Spatially Diffuse Stimuli Reduces Signal and Noise Correlations via Independent Mechanisms in a Cerebellum-Like Structure. PLoS Computational Biology, 2015, 11, e1004034. | 1.5 | 25 |
| 59 | Electrosensory processing in<i>Apteronotus albifrons</i>: implications for general and specific neural coding strategies across wave-type weakly electric fish species. Journal of Neurophysiology, 2016, 116, 2909-2921. | 0.9 | 25 |
| 60 | Simple models of bursting and non-bursting P-type electroreceptors. Neurocomputing, 2001, 38-40, 129-139. | 3.5 | 24 |
| 61 | Burst Firing in the Electrosensory System of Gymnotiform Weakly Electric Fish: Mechanisms and Functional Roles. Frontiers in Computational Neuroscience, 2016, 10, 81. | 1.2 | 24 |
| 62 | Serotonin modulates electrosensory processing and behavior via 5-HT2-like receptors. Neuroscience, 2014, 271, 108-118. | 1.1 | 23 |
| 63 | Adaptation to second order stimulus features by electrosensory neurons causes ambiguity. Scientific Reports, 2016, 6, 28716. | 1.6 | 23 |
| 64 | Feedback optimizes neural coding and perception of natural stimuli. ELife, 2018, 7, . | 2.8 | 23 |
| 65 | SK channel subtypes enable parallel optimized coding of behaviorally relevant stimulus attributes: A review. Channels, 2017, 11, 281-304. | 1.5 | 21 |
| 66 | Differential receptive field organizations give rise to nearly identical neural correlations across three parallel sensory maps in weakly electric fish. PLoS Computational Biology, 2017, 13, e1005716. | 1.5 | 21 |
| 67 | Parallel sparse and dense information coding streams in the electrosensory midbrain. Neuroscience Letters, 2015, 607, 1-6. | 1.0 | 20 |
| 68 | Bursts and Isolated Spikes Code for Opposite Movement Directions in Midbrain Electrosensory Neurons. PLoS ONE, 2012, 7, e40339. | 1.1 | 19 |
| 69 | Subâ€•and suprathreshold adaptation currents have opposite effects on frequency tuning. Journal of Physiology, 2012, 590, 4839-4858. | 1.3 | 19 |
| 70 | The effects of spontaneous activity, background noise, and the stimulus ensemble on information transfer in neurons. , 0, . | | 19 |
| 71 | In vivo conditions influence the coding of stimulus features by bursts of action potentials. Journal of Computational Neuroscience, 2011, 31, 369-383. | 0.6 | 16 |
| 72 | Stimulus background influences phase invariant coding by correlated neural activity. ELife, 2017, 6, . | 2.8 | 16 |

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|---|---|---|---|
| 73 | The effects of spontaneous activity, background noise, and the stimulus ensemble on information transfer in neurons. Network: Computation in Neural Systems, 2003, 14, 803-24. | 2.2 | 16 |
| 74 | In vivo Conditions Induce Faithful Encoding of Stimuli by Reducing Nonlinear Synchronization in Vestibular Sensory Neurons. PLoS Computational Biology, 2011, 7, e1002120. | 1.5 | 14 |
| 75 | Population Coding and Correlated Variability in Electrosensory Pathways. Frontiers in Integrative Neuroscience, 2018, 12, 56. | 1.0 | 14 |
| 76 | Noise shaping in neural populations. Physical Review E, 2009, 79, 011914. | 0.8 | 13 |
| 77 | Motion processing across multiple topographic maps in the electrosensory system. Physiological Reports, 2014, 2, e00253. | 0.7 | 13 |
| 78 | Weakly electric fish distinguish between envelope stimuli arising from different behavioral contexts. Journal of Experimental Biology, 2018, 221, . | 0.8 | 13 |
| 79 | Neural variability determines coding strategies for natural self-motion in macaque monkeys. ELife, 2020, 9, . | 2.8 | 13 |
| 80 | Descending pathways mediate adaptive optimized coding of natural stimuli in weakly electric fish. Science Advances, 2019, 5, eaax2211. | 4.7 | 12 |
| 81 | Population Coding of Natural Electrosensory Stimuli by Midbrain Neurons. Journal of Neuroscience, 2021, 41, 3822-3841. | 1.7 | 11 |
| 82 | The neural basis for violations of Weberâ€™s law in self-motion perception. Proceedings of the National Academy of Sciences of the United States of America, 2021, 118, . | 3.3 | 10 |
| 83 | ISI CORRELATIONS AND INFORMATION TRANSFER. Fluctuation and Noise Letters, 2004, 04, L195-L205. | 1.0 | 9 |
| 84 | Experimental and theoretical demonstration of noise shaping by interspike interval correlations (Invited Paper). , 2005, 5841, 150. | | 9 |
| 85 | Novel Functions of Feedback in Electrosensory Processing. Frontiers in Integrative Neuroscience, 2019, 13, 52. | 1.0 | 9 |
| 86 | Neural Synchrony Gives Rise to Amplitude- and Duration-Invariant Encoding Consistent With Perception of Natural Communication Stimuli. Frontiers in Neuroscience, 2020, 14, 79. | 1.4 | 9 |
| 87 | Serotonin modulates optimized coding of natural stimuli through increased neural and behavioural responses via enhanced burst firing. Journal of Physiology, 2020, 598, 1573-1589. | 1.3 | 9 |
| 88 | Serotonin Selectively Increases Detectability of Motion Stimuli in the Electrosensory System. ENeuro, 2018, 5, ENEURO.0013-18.2018. | 0.9 | 9 |
| 89 | Sparse coding of natural communication signals in midbrain neurons. BMC Neuroscience, 2009, 10, . | 0.8 | 8 |
| 90 | Correlations and Memory in Neurodynamical Systems. Lecture Notes in Physics, 2003, , 286-308. | 0.3 | 8 |

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| 91 | Electrosensory neural responses to natural electro-communication stimuli are distributed along a continuum. PLoS ONE, 2017, 12, e0175322. | 1.1 | 8 |
| 92 | Sensory adaptation mediates efficient and unambiguous encoding of natural stimuli by vestibular thalamocortical pathways. Nature Communications, 2022, 13, 2612. | 5.8 | 8 |
| 93 | Coding stimulus amplitude by correlated neural activity. Physical Review E, 2015, 91, 042717. | 0.8 | 7 |
| 94 | Serotonergic Modulation of Sensory Neuron Activity and Behavior in Apteronotus albifrons. Frontiers in Integrative Neuroscience, 2020, 14, 38. | 1.0 | 7 |
| 95 | Envelope Coding and Processing: Implications for Perception and Behavior. Springer Handbook of Auditory Research, 2019, , 251-277. | 0.3 | 7 |
| 96 | Synergistic population coding of natural communication stimuli by hindbrain electrosensory neurons. Scientific Reports, 2021, 11, 10840. | 1.6 | 6 |
| 97 | Neuronal On- and Off-type heterogeneities improve population coding of envelope signals in the presence of stimulus-induced noise. Scientific Reports, 2020, 10, 10194. | 1.6 | 5 |
| 98 | Noise Shaping in Neural Populations with Global Delayed Feedback. Mathematical Modelling of Natural Phenomena, 2010, 5, 100-124. | 0.9 | 4 |
| 99 | Negative optokinetic afternystagmus in larval zebrafish demonstrates set-point adaptation. Scientific Reports, 2019, 9, 19039. | 1.6 | 4 |
| 100 | Physiology of Tuberous Electrosensory Systems â˜†. , 2017, , . | | 4 |
| 101 | From Molecules to Behavior: Organismal-Level Regulation of Ion Channel Trafficking. PLoS Biology, 2009, 7, e1000211. | 2.6 | 3 |
| 102 | Coding signal strength by correlated activity in bursting neurons. BMC Neuroscience, 2010, 11, . | 0.8 | 3 |
| 103 | Active Sensing: Constancy Requires Change. Current Biology, 2018, 28, R1391-R1394. | 1.8 | 3 |
| 104 | Serotonin and sensory processing. Handbook of Behavioral Neuroscience, 2020, , 449-459. | 0.7 | 3 |
| 105 | Lower Baseline Variability Gives Rise to Lower Detection Thresholds in Midbrain than Hindbrain Electrosensory Neurons. Neuroscience, 2020, 448, 43-54. | 1.1 | 2 |
| 106 | Differential neural responses to naturally occurring envelopes in the electrosensory system. BMC Neuroscience, 2014, 15, . | 0.8 | 1 |
| 107 | One cell, two bursting mechanisms. In vivo conditions change the in vitroburst in pyramidal cells of the ElectroLateral Lobe (ELL) of electric fish. BMC Neuroscience, 2008, 9, . | 0.8 | 0 |
| 108 | Burst firing regulates correlated activity in neurons. BMC Neuroscience, 2009, 10, . | 0.8 | 0 |

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| 109 | Neural Heterogeneities and the coding of contrast envelopes. BMC Neuroscience, 2010, 11, . | 0.8 | 0 |
| 110 | Coding motion direction by action potential patterns. BMC Neuroscience, 2011, 12, . | 0.8 | 0 |
| 111 | Burst dynamics enable contrast coding via synchrony. BMC Neuroscience, 2011, 12, . | 0.8 | 0 |
| 112 | Parallel coding of first and second order stimulus attributes. BMC Neuroscience, 2012, 13, O13. | 0.8 | 0 |
| 113 | Neural correlations code for stimulus variance. BMC Neuroscience, 2013, 14, P61. | 0.8 | 0 |
| 114 | Neural correlations in the electrosensory lateral line lobe of the weakly electric fish, Apteronotus leptorhynchus: analysis of multi-channel recordings. BMC Neuroscience, 2014, 15, . | 0.8 | 0 |
| 115 | Changes in stimulus envelope reveal two classes of peripheral electrosensory neurons. BMC Neuroscience, 2014, 15, . | 0.8 | 0 |
| 116 | Editorial: Recent Advances in Electroreception and Electrogeneration. Frontiers in Integrative Neuroscience, 2021, 15, 668677. | 1.0 | 0 |