

# Mark K Transtrum

## List of Publications by Citations

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|-------------------|-------------------------|----------------|----------------|
| 53<br>papers      | 1,017<br>citations      | 16<br>h-index  | 31<br>g-index  |
| 61<br>ext. papers | 1,345<br>ext. citations | 4.6<br>avg, IF | 4.6<br>L-index |

| #  | Paper  | IF   | Citations |
|----|--|------|-----------|
| 53 | Perspective: Sloppiness and emergent theories in physics, biology, and beyond. <i>Journal of Chemical Physics</i> , <b>2015</b> , 143, 010901  | 3.9  | 151       |
| 52 | Parameter space compression underlies emergent theories and predictive models. <i>Science</i> , <b>2013</b> , 342, 604-7   | 33.3 | 146       |
| 51 | Why are nonlinear fits to data so challenging?. <i>Physical Review Letters</i> , <b>2010</b> , 104, 060201   | 7.4  | 107       |
| 50 | Geometry of nonlinear least squares with applications to sloppy models and optimization. <i>Physical Review E</i> , <b>2011</b> , 83, 036701   | 2.4  | 85        |
| 49 | Mechanisms of In Vivo Ribosome Maintenance Change in Response to Nutrient Signals. <i>Molecular and Cellular Proteomics</i> , <b>2017</b> , 16, 243-254  | 7.6  | 49        |
| 48 | Model reduction by manifold boundaries. <i>Physical Review Letters</i> , <b>2014</b> , 113, 098701   | 7.4  | 49        |
| 47 | Superheating field of superconductors within Ginzburg-Landau theory. <i>Physical Review B</i> , <b>2011</b> , 83,  | 3.3  | 40        |
| 46 | Use of the LQ model with large fraction sizes results in underestimation of isoeffect doses. <i>Radiotherapy and Oncology</i> , <b>2013</b> , 109, 21-5  | 5.3  | 38        |
| 45 | Enzyme kinetics determined by single-injection isothermal titration calorimetry. <i>Methods</i> , <b>2015</b> , 76, 194-200  | 4.0  | 32        |
| 44 | The Limitations of Model-Based Experimental Design and Parameter Estimation in Sloppy Systems. <i>PLoS Computational Biology</i> , <b>2016</b> , 12, e1005227  | 5    | 32        |
| 43 | Bridging Mechanistic and Phenomenological Models of Complex Biological Systems. <i>PLoS Computational Biology</i> , <b>2016</b> , 12, e1004915   | 5    | 32        |
| 42 | Enzyme-catalyzed and binding reaction kinetics determined by titration calorimetry. <i>Biochimica Et Biophysica Acta - General Subjects</i> , <b>2016</b> , 1860, 957-966  | 4    | 31        |
| 41 | Theoretical estimates of maximum fields in superconducting resonant radio frequency cavities: stability theory, disorder, and laminates. <i>Superconductor Science and Technology</i> , <b>2017</b> , 30, 033002 | 3.1  | 23        |
| 40 | Maximizing the information learned from finite data selects a simple model. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2018</b> , 115, 1760-1765                | 11.5 | 22        |
| 39 | Optimal experiment selection for parameter estimation in biological differential equation models. <i>BMC Bioinformatics</i> , <b>2012</b> , 13, 181  | 3.6  | 20        |
| 38 | Measurement-Directed Reduction of Dynamic Models in Power Systems. <i>IEEE Transactions on Power Systems</i> , <b>2017</b> , 32, 2243-2253   | 7    | 16        |
| 37 | Shielding Superconductors with Thin Films as Applied to rf Cavities for Particle Accelerators. <i>Physical Review Applied</i> , <b>2015</b> , 4,   | 4.3  | 15        |

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| 36 | Comment on "Sloppy models, parameter uncertainty, and the role of experimental design". <i>Molecular BioSystems</i> , <b>2011</b> , 7, 2522; author reply 2523-4   |     | 14 |
| 35 | Sloppiness and the Geometry of Parameter Space. <i>Studies in Mechanobiology, Tissue Engineering and Biomaterials</i> , <b>2016</b> , 271-299  | 0.5 | 12 |
| 34 | Information Geometry Approach to Verification of Dynamic Models in Power Systems. <i>IEEE Transactions on Power Systems</i> , <b>2018</b> , 33, 440-450  | 7   | 10 |
| 33 | Vortex nucleation in superconductors within time-dependent Ginzburg-Landau theory in two and three dimensions: Role of surface defects and material inhomogeneities. <i>Physical Review B</i> , <b>2020</b> , 101, | 3.3 | 9  |
| 32 | The Spectrum of Mechanism-Oriented Models and Methods for Explanations of Biological Phenomena. <i>Processes</i> , <b>2018</b> , 6,  | 2.9 | 8  |
| 31 | Structural susceptibility and separation of time scales in the van der Pol oscillator. <i>Physical Review E</i> , <b>2012</b> , 86, 026712   | 2.4 | 7  |
| 30 | Ginzburg-Landau theory of the superheating field anisotropy of layered superconductors. <i>Physical Review B</i> , <b>2016</b> , 94,   | 3.3 | 6  |
| 29 | Commutation relations for functions of operators. <i>Journal of Mathematical Physics</i> , <b>2005</b> , 46, 063510  | 1.2 | 6  |
| 28 | Modeling inter-particle magnetic correlations in magnetite nanoparticle assemblies using x-ray magnetic scattering data. <i>AIP Advances</i> , <b>2019</b> , 9, 035033   | 1.5 | 5  |
| 27 | Calorimetric Methods for Measuring Stability and Reusability of Membrane Immobilized Enzymes. <i>Journal of Food Science</i> , <b>2018</b> , 83, 326-331   | 3.4 | 5  |
| 26 | Effect of extreme temperatures on soil: A calorimetric approach. <i>Thermochimica Acta</i> , <b>2018</b> , 670, 128-135.   | 3.9 | 5  |
| 25 | Model Boundary Approximation Method as a Unifying Framework for Balanced Truncation and Singular Perturbation Approximation. <i>IEEE Transactions on Automatic Control</i> , <b>2019</b> , 64, 4796-4802           | 5.9 | 4  |
| 24 | Experimental design and model reduction in systems biology. <i>Quantitative Biology</i> , <b>2018</b> , 6, 287-306   | 3.9 | 4  |
| 23 | Information geometry for model identification and parameter estimation in renewable energy □ DFIG plant case. <i>IET Generation, Transmission and Distribution</i> , <b>2018</b> , 12, 1294-1302                   | 2.5 | 4  |
| 22 | Flexible hybrid state estimation for power systems with communication irregularities. <i>IET Generation, Transmission and Distribution</i> , <b>2020</b> , 14, 2111-2119   | 2.5 | 3  |
| 21 | Information geometry for model verification in energy systems <b>2016</b> ,  |     | 3  |
| 20 | Interleaving physics- and data-driven models for power system transient dynamics. <i>Electric Power Systems Research</i> , <b>2020</b> , 189, 106824   | 3.5 | 2  |
| 19 | Hybrid power system state estimation with irregular sampling <b>2017</b> ,   |     | 2  |

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|----|--|-----|---|
| 18 | A unified view of Balanced Truncation and Singular Perturbation Approximations <b>2015</b> ,   |     | 2 |
| 17 | Symbolic Regression for Data-Driven Dynamic Model Refinement in Power Systems. <i>IEEE Transactions on Power Systems</i> , <b>2021</b> , 36, 2390-2402                                   | 7   | 2 |
| 16 | Data-Driven Classification, Reduction, Parameter Identification and State Extension in Hybrid Power Systems. <i>IEEE Transactions on Power Systems</i> , <b>2020</b> , 1-1               | 7   | 2 |
| 15 | Effect of the density of states at the Fermi level on defect free energies and superconductivity: A case study of Nb <sub>3</sub> Sn. <i>Physical Review B</i> , <b>2021</b> , 103,      | 3.3 | 2 |
| 14 | Analysis of magnetic vortex dissipation in Sn-segregated boundaries in Nb <sub>3</sub> Sn superconducting RF cavities. <i>Physical Review B</i> , <b>2021</b> , 103,                     | 3.3 | 2 |
| 13 | Machine learning-based ensemble model predictions of outdoor ambient sound levels <b>2018</b> ,  |     | 2 |
| 12 | Data Classification and Parameter Identification in Power Systems by Manifold Learning <b>2019</b> ,   |     | 1 |
| 11 | Network Reduction in Transient Stability Models using Partial Response Matching <b>2019</b> ,  |     | 1 |
| 10 | Influence of Communication Irregularities and Co-simulation on Hybrid Power System State Estimation <b>2018</b> ,  |     | 1 |
| 9  | Geometrically Motivated Reparameterization for Identifiability Analysis in Power Systems Models <b>2018</b> ,  |     | 1 |
| 8  | Integration of Physics- and Data-Driven Power System Models in Transient Analysis After Major Disturbances. <i>IEEE Systems Journal</i> , <b>2022</b> , 1-12                             | 4.3 | 1 |
| 7  | Bayesian, frequentist, and information geometric approaches to parametric uncertainty quantification of classical empirical interatomic potentials. <i>Journal of Chemical Physics</i> , | 3.9 | 1 |
| 6  | Unwinding the model manifold: Choosing similarity measures to remove local minima in sloppy dynamical systems. <i>Physical Review E</i> , <b>2019</b> , 100, 012206                      | 2.4 | 0 |
| 5  | Automatic classification and reduction of wind noise in spectral data. <i>JASA Express Letters</i> , <b>2021</b> , 1, 063602   |     | 0 |
| 4  | State Estimation Model Reduction through the Manifold Boundary Approximation Method. <i>IEEE Transactions on Power Systems</i> , <b>2021</b> , 1-1                                       | 7   | 0 |
| 3  | Determination of Reaction Kinetics by Calorimetry. <i>Springer Briefs in Molecular Science</i> , <b>2018</b> , 23-27   | 0.6 |   |
| 2  | An analytic iterative approach to solving the time-independent Schrödinger equation. <i>International Journal of Quantum Chemistry</i> , <b>2009</b> , 109, 982-998                      | 2.1 |   |
| 1  | A perturbative approach to Snyder space with applications. <i>Journal of Physics A</i> , <b>2006</b> , 39, 14985-14996   |     |   |

