# Houman Owhadi

## List of Publications by Year
## in descending order

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|---|---|---|---|
| 79<br>papers | 2,254<br>citations | 257450<br>24<br>h-index | 214800<br>47<br>g-index |
| 95<br>all docs | 95<br>docs citations | 95<br>times ranked | 955<br>citing authors |

| # | Article | IF | Citations |
|---|---------|-----|-----------|
| 1 | A non-adapted sparse approximation of PDEs with stochastic inputs. Journal of Computational Physics, 2011, 230, 3015-3034. | 3.8 | 356 |
| 2 | Metric-based upscaling. Communications on Pure and Applied Mathematics, 2007, 60, 675-723. | 3.1 | 156 |
| 3 | Bayesian Numerical Homogenization. Multiscale Modeling and Simulation, 2015, 13, 812-828. | 1.6 | 149 |
| 4 | Multigrid with Rough Coefficients and Multiresolution Operator Decomposition from Hierarchical Information Games. SIAM Review, 2017, 59, 99-149. | 9.5 | 138 |
| 5 | Polyharmonic homogenization, rough polyharmonic splines and sparse super-localization. ESAIM: Mathematical Modelling and Numerical Analysis, 2014, 48, 517-552. | 1.9 | 118 |
| 6 | Localized Bases for Finite-Dimensional Homogenization Approximations with Nonseparated Scales and High Contrast. Multiscale Modeling and Simulation, 2011, 9, 1373-1398. | 1.6 | 91 |
| 7 | Numerical coarsening of inhomogeneous elastic materials. ACM Transactions on Graphics, 2009, 28, 1-8. | 7.2 | 88 |
| 8 | Long-Run Accuracy of Variational Integrators in the Stochastic Context. SIAM Journal on Numerical Analysis, 2010, 48, 278-297. | 2.3 | 84 |
| 9 | Numerical homogenization of the acoustic wave equations with a continuum of scales. Computer Methods in Applied Mechanics and Engineering, 2008, 198, 397-406. | 6.6 | 83 |
| 10 | Flux Norm Approach to Finite Dimensional Homogenization Approximations with Non-Separated Scales and High Contrast. Archive for Rational Mechanics and Analysis, 2010, 198, 677-721. | 2.4 | 80 |
| 11 | Nonintrusive and Structure Preserving Multiscale Integration of Stiff ODEs, SDEs, and Hamiltonian Systems with Hidden Slow Dynamics via Flow Averaging. Multiscale Modeling and Simulation, 2010, 8, 1269-1324. | 1.6 | 66 |
| 12 | Approximation of the effective conductivity of ergodic media by periodization. Probability Theory and Related Fields, 2003, 125, 225-258. | 1.8 | 65 |
| 13 | Gamblets for opening the complexity-bottleneck of implicit schemes for hyperbolic and parabolic ODEs/PDEs with rough coefficients. Journal of Computational Physics, 2017, 347, 99-128. | 3.8 | 63 |
| 14 | Homogenization of Parabolic Equations with a Continuum of Space and Time Scales. SIAM Journal on Numerical Analysis, 2008, 46, 1-36. | 2.3 | 59 |
| 15 | Multiscale homogenization with bounded ratios and anomalous slow diffusion. Communications on Pure and Applied Mathematics, 2003, 56, 80-113. | 3.1 | 52 |
| 16 | Anomalous slow diffusion from perpetual homogenization. Annals of Probability, 2003, 31, 1935. | 1.8 | 49 |
| 17 | Kernel Flows: From learning kernels from data into the abyss. Journal of Computational Physics, 2019, 389, 22-47. | 3.8 | 48 |
| 18 | Solving and learning nonlinear PDEs with Gaussian processes. Journal of Computational Physics, 2021, 447, 110668. | 3.8 | 46 |

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|---|---------|-----|-----------|
| 19 | Learning dynamical systems from data: A simple cross-validation perspective, part I: Parametric kernel flows. Physica D: Nonlinear Phenomena, 2021, 421, 132817. | 2.8 | 44 |
| 20 | Operator-adapted wavelets for finite-element differential forms. Journal of Computational Physics, 2019, 388, 144-177. | 3.8 | 42 |
| 21 | Averaging Versus Chaos in Turbulent Transport?. Communications in Mathematical Physics, 2004, 247, 553-599. | 2.2 | 40 |
| 22 | On the Brittleness of Bayesian Inference. SIAM Review, 2015, 57, 566-582. | 9.5 | 36 |
| 23 | Brittleness of Bayesian inference under finite information in a continuous world. Electronic Journal of Statistics, 2015, 9, . | 0.7 | 34 |
| 24 | Sparse Cholesky Factorization by Kullback--Leibler Minimization. SIAM Journal of Scientific Computing, 2021, 43, A2019-A2046. | 2.8 | 33 |
| 25 | Variational integrators for electric circuits. Journal of Computational Physics, 2013, 242, 498-530. | 3.8 | 23 |
| 26 | Compression, Inversion, and Approximate PCA of Dense Kernel Matrices at Near-Linear Computational Complexity. Multiscale Modeling and Simulation, 2021, 19, 688-730. | 1.6 | 21 |
| 27 | Super-Diffusivity in a Shear Flow ModelÂ¶from Perpetual Homogenization. Communications in Mathematical Physics, 2002, 227, 281-302. | 2.2 | 13 |
| 28 | Material-adapted refinable basis functions for elasticity simulation. ACM Transactions on Graphics, 2019, 38, 1-15. | 7.2 | 13 |
| 29 | Convex Optimal Uncertainty Quantification. SIAM Journal on Optimization, 2015, 25, 1368-1387. | 2.0 | 12 |
| 30 | Fast Eigenpairs Computation with Operator Adapted Wavelets and Hierarchical Subspace Correction. SIAM Journal on Numerical Analysis, 2019, 57, 2519-2550. | 2.3 | 12 |
| 31 | Consistency of empirical Bayes and kernel flow for hierarchical parameter estimation. Mathematics of Computation, 2021, 90, 2527-2578. | 2.1 | 12 |
| 32 | Control of a model of DNA division via parametric resonance. Chaos, 2013, 23, 013117. | 2.5 | 10 |
| 33 | Brittleness of Bayesian inference and new Selberg formulas. Communications in Mathematical Sciences, 2016, 14, 83-145. | 1.0 | 10 |
| 34 | From Efficient Symplectic Exponentiation of Matrices to Symplectic Integration of High-dimensional Hamiltonian Systems with Slowly Varying Quadratic Stiff Potentials. Applied Mathematics Research EXpress, 2011, 2011, 242-280. | 1.0 | 9 |
| 35 | Qualitative Robustness in Bayesian Inference. ESAIM - Probability and Statistics, 2017, 21, 251-274. | 0.5 | 8 |
| 36 | Deep regularization and direct training of the inner layers of Neural Networks with Kernel Flows. Physica D: Nonlinear Phenomena, 2021, 426, 132952. | 2.8 | 8 |

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| 37 | Statistical Numerical Approximation. Notices of the American Mathematical Society, 2019, 66, 1. | 0.2 | 8 |
| 38 | A cutoff phenomenon in accelerated stochastic simulations of chemical kinetics via flow averaging (FLAVOR-SSA). Journal of Chemical Physics, 2010, 133, 244117. | 3.0 | 6 |
| 39 | Multiresolution operator decomposition for flow simulation in fractured porous media. Journal of Computational Physics, 2019, 391, 381-396. | 3.8 | 6 |
| 40 | Optimal Control Strategies for Robust Certification. Journal of Computational and Nonlinear Dynamics, 2010, 5, . | 1.2 | 5 |
| 41 | Temporal Homogenization of Linear ODEs, with Applications to Parametric Super-Resonance and Energy Harvest. Archive for Rational Mechanics and Analysis, 2016, 220, 261-296. | 2.4 | 5 |
| 42 | De-noising by thresholding operator adapted wavelets. Statistics and Computing, 2019, 29, 1185-1201. | 1.5 | 5 |
| 43 | Global Energy Matching Method for Atomistic-to-Continuum Modeling of Self-Assembling Biopolymer Aggregates. Multiscale Modeling and Simulation, 2010, 8, 1958-1980. | 1.6 | 4 |
| 44 | Kernel Mode Decomposition and the Programming of Kernels. Sureys and Tutorials in the Applied Mathematical Sciences, 2021, , . | 0.4 | 4 |
| 45 | Extreme points of a ball about a measure with finite support. Communications in Mathematical Sciences, 2017, 15, 77-96. | 1.0 | 3 |
| 46 | Space-time FLAVORS: finite difference, multisymlectic, and pseudospectral integrators for multiscale PDEs. Dynamics of Partial Differential Equations, 2011, 8, 21-45. | 0.9 | 3 |
| 47 | Computational graph completion. Research in Mathematical Sciences, 2022, 9, 1. | 1.0 | 3 |
| 48 | From a market of dreamers to economical shocks. Physica A: Statistical Mechanics and Its Applications, 2004, 343, 583-602. | 2.6 | 1 |
| 49 | One-Shot Learning of Stochastic Differential Equations with Computational Graph Completion. SSRN Electronic Journal, 0, , . | 0.4 | 1 |
| 50 | BISTABLE EQUILIBRIUM POINTS OF MERCURY BODY BURDEN. Journal of Biological Systems, 2008, 16, 139-150. | 1.4 | 0 |
| 51 | Certification with optimal control strategies. Proceedings in Applied Mathematics and Mechanics, 2010, 10, 621-622. | 0.2 | 0 |
| 52 | Variational integrators for electric circuits. Proceedings in Applied Mathematics and Mechanics, 2011, 11, 783-784. | 0.2 | 0 |
| 53 | Interplay of Theory and Numerics for Deterministic and Stochastic Homogenization. Oberwolfach Reports, 2013, 10, 801-865. | 0.0 | 0 |
| 54 | Sobolev Space Basics. , 2019, , 25-33. | | 0 |

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| 55 | Optimal Recovery Splines. , 2019, , 34-37. | | 0 |
| 56 | Numerical Homogenization. , 2019, , 38-62. | | 0 |
| 57 | Operator-Adapted Wavelets. , 2019, , 63-89. | | 0 |
| 58 | Fast Solvers. , 2019, , 90-102. | | 0 |
| 59 | Gaussian Fields. , 2019, , 105-118. | | 0 |
| 60 | Optimal Recovery Games on Hs0(Î©). , 2019, , 119-130. | | 0 |
| 61 | Gamblets. , 2019, , 131-136. | | 0 |
| 62 | Hierarchical Games. , 2019, , 137-148. | | 0 |
| 63 | Banach Space Basics. , 2019, , 151-153. | | 0 |
| 64 | Optimal Recovery Splines. , 2019, , 154-159. | | 0 |
| 65 | Gamblets. , 2019, , 160-194. | | 0 |
| 66 | Bounded Condition Numbers. , 2019, , 195-251. | | 0 |
| 67 | Exponential Decay. , 2019, , 252-296. | | 0 |
| 68 | Fast Gamblet Transform. , 2019, , 297-344. | | 0 |
| 69 | Gaussian Measures, Cylinder Measures, and Fields on B. , 2019, , 347-359. | | 0 |
| 70 | Optimal Recovery Games on B. , 2019, , 360-369. | | 0 |
| 71 | Game Theoretic Interpretation of Gamblets. , 2019, , 370-377. | | 0 |
| 72 | Survey of Statistical Numerical Approximation. , 2019, , 378-386. | | 0 |

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| 73 | Positive Definite Matrices. , 2019, , 389-405. | | 0 |
| 74 | Nonsymmetric Operators. , 2019, , 406-409. | | 0 |
| 75 | Time-Dependent Operators. , 2019, , 410-420. | | 0 |
| 76 | Dense Kernel Matrices. , 2019, , 421-426. | | 0 |
| 77 | Non-trigonometric Waveform and Iterated KMD. Sureys and Tutorials in the Applied Mathematical Sciences, 2021, , 57-68. | 0.4 | 0 |
| 78 | Unknown Base Waveforms. Sureys and Tutorials in the Applied Mathematical Sciences, 2021, , 69-74. | 0.4 | 0 |
| 79 | Crossing Frequencies, Vanishing Modes, and Noise. Sureys and Tutorials in the Applied Mathematical Sciences, 2021, , 75-86. | 0.4 | 0 |