



Lexing Ying

Professor of Mathematics and, by courtesy, of Computer Science

 Curriculum Vitae available Online

Bio

ACADEMIC APPOINTMENTS

- Professor, Mathematics
- Professor (By courtesy), Computer Science
- Member, Institute for Computational and Mathematical Engineering (ICME)

HONORS AND AWARDS

- SIAM Fellow, SIAM (2024)
- Invited lecture, The International Congress of Mathematicians (2022)
- Morningside Silver Medal of Applied Mathematics, ICCM (2016)
- James H. Wilkinson Prize in Numerical Analysis and Scientific Computing, SIAM (2013)
- Feng Kang Prize of Scientific Computing, Chinese Academy of Sciences (2011)
- CAREER Award, National Science Foundation (2009)
- Alfred P. Sloan Research Fellowship, Sloan Foundation (2007)

Teaching

COURSES

2025-26

- Computational Methods of Applied Mathematics: CME 306, MATH 220B (Win)

2024-25

- Topics in Applied Math: Quantum Algorithms for Scientific Computation: MATH 275A (Aut)
- Computational Methods of Applied Mathematics: CME 306, MATH 220B (Win)
- Introduction to Scientific Computing: CME 108 (Aut)

2023-24

- Computational Methods of Applied Mathematics: CME 306, MATH 220B (Win)
- Introduction to Scientific Computing: CME 108 (Aut)
- Topics in Applied Math II: MATH 275B (Win)

2022-23

- Linear Algebra, Multivariable Calculus, and Modern Applications: MATH 51 (Win)

- Numerical Solution of Partial Differential Equations: CME 306, MATH 226 (Spr)

STANFORD ADVISEES

Orals Chair

Ran Xie

Postdoctoral Faculty Sponsor

Xun Tang

Doctoral Dissertation Advisor (AC)

Haoxuan Chen, Hongrui Chen, Rajat Dwaraknath, HONGKANG NI, YINUO REN, NAN SHENG

Doctoral Dissertation Co-Advisor (AC)

Ya-Chi Chu, Shaghayegh Fazliani

Doctoral (Program)

Lei Shu

Publications

PUBLICATIONS

- **Multimodal sampling via approximate symmetries** *RESEARCH IN THE MATHEMATICAL SCIENCES*
Ying, L.
2025; 12 (2)
- **An Analysis of Offline Model-Based Learning with Action Noise** *JOURNAL OF SCIENTIFIC COMPUTING*
Li, H., Gangwani, T., Ying, L.
2025; 103 (2)
- **Correcting convexity bias in function and functional estimate** *RESEARCH IN THE MATHEMATICAL SCIENCES*
Ma, C., Ying, L.
2025; 12 (1)
- **A perturbative analysis for noisy spectral estimation** *APPLIED AND COMPUTATIONAL HARMONIC ANALYSIS*
Ying, L.
2025; 74
- **Multidimensional unstructured sparse recovery via eigenmatrix** *APPLIED AND COMPUTATIONAL HARMONIC ANALYSIS*
Ying, L.
2025; 74
- **Computing free convolutions via contour integrals** *RANDOM MATRICES-THEORY AND APPLICATIONS*
Cortinovis, A., Ying, L.
2024
- **Quantum Multiple Eigenvalue Gaussian filtered Search: an efficient and versatile quantum phase estimation method** *QUANTUM*
Ding, Z., Li, H., Lin, L., Ni, H., Ying, L., Zhang, R.
2024; 8
- **Heisenberg-limited Hamiltonian learning for interacting bosons** *NPJ QUANTUM INFORMATION*
Li, H., Tong, Y., Gefen, T., Ni, H., Ying, L.
2024; 10 (1)
- **Solving high-dimensional Fokker-Planck equation with functional hierarchical tensor** *JOURNAL OF COMPUTATIONAL PHYSICS*
Tang, X., Ying, L.
2024; 511

- **Quantum Hamiltonian Learning for the Fermi-Hubbard Model** *ACTA APPLICANDAE MATHEMATICAE*
Ni, H., Li, H., Ying, L.
2024; 191 (1)
- **Eigenmatrix for unstructured sparse recovery** *APPLIED AND COMPUTATIONAL HARMONIC ANALYSIS*
Ying, L.
2024; 71
- **ACCELERATING PRIMAL-DUAL METHODS FOR REGULARIZED MARKOV DECISION PROCESSES** *SIAM JOURNAL ON OPTIMIZATION*
Li, H., Yu, H., Ying, L., Dhillon, I. S.
2024; 34 (1): 764-789
- **Multi-Objective Optimization via Wasserstein-Fisher-Rao Gradient Flow**
Ren, Y., Xiao, T., Gangwani, T., Rangi, A., Rahmanian, H., Ying, L., Sanyal, S.
edited by Dasgupta, S., Mandt, S., Li, Y.
JMLR-JOURNAL MACHINE LEARNING RESEARCH.2024
- **Understanding the Generalization Benefits of Late Learning Rate Decay**
Ren, Y., Ma, C., Ying, L.
edited by Dasgupta, S., Mandt, S., Li, Y.
JMLR-JOURNAL MACHINE LEARNING RESEARCH.2024
- **Statistical Spatially Inhomogeneous Diffusion Inference**
Ren, Y., Lu, Y., Ying, L., Rotskoff, G. M.
edited by Wooldridge, M., Dy, J., Natarajan, S.
ASSOC ADVANCEMENT ARTIFICIAL INTELLIGENCE.2024: 14820-14828
- **Adaptive low-depth quantum algorithms for robust multiple-phase estimation** *PHYSICAL REVIEW A*
Li, H., Ni, H., Ying, L.
2023; 108 (6)
- **Operator shifting for noisy elliptic systems** *RESEARCH IN THE MATHEMATICAL SCIENCES*
Etter, P. A., Ying, L.
2023; 10 (4)
- **On low-depth algorithms for quantum phase estimation** *QUANTUM*
Ni, H., Li, H., Ying, L.
2023; 7
- **A note on spike localization for line spectrum estimation** *APPLIED AND COMPUTATIONAL HARMONIC ANALYSIS*
Li, H., Ni, H., Ying, L.
2023; 67
- **High-dimensional density estimation with tensorizing flow** *RESEARCH IN THE MATHEMATICAL SCIENCES*
Ren, Y., Zhao, H., Khoo, Y., Ying, L.
2023; 10 (3)
- **On efficient quantum block encoding of pseudo- differential operators** *QUANTUM*
Li, H., Ni, H., Ying, L.
2023; 7
- **Generative modeling via tree tensor network states** *RESEARCH IN THE MATHEMATICAL SCIENCES*
Tang, X., Hur, Y., Khoo, Y., Ying, L.
2023; 10 (2)
- **Variational actor-critic algorithms***,** *ESAIM-CONTROL OPTIMISATION AND CALCULUS OF VARIATIONS*
Zhu, Y., Ying, L.
2023; 29

- **Solving Traveltime Tomography with Deep Learning** *COMMUNICATIONS IN MATHEMATICS AND STATISTICS*
Fan, Y., Ying, L.
2023
- **DOUBLE FLIP MOVE FOR ISING MODELS WITH MIXED BOUNDARY CONDITIONS** *JOURNAL OF COMPUTATIONAL MATHEMATICS*
Ying, L.
2023
- **Efficient long-range convolutions for point clouds** *JOURNAL OF COMPUTATIONAL PHYSICS*
Peng, Y., Lin, L., Ying, L., Zepeda-Nunez, L.
2023; 473
- **Coarse-proxy reduced basis methods for integral equations** *JOURNAL OF COMPUTATIONAL PHYSICS*
Etter, P. A., Fan, Y., Ying, L.
2023; 475
- **COMBINING RESAMPLING AND REWEIGHTING FOR FAITHFUL STOCHASTIC OPTIMIZATION** *COMMUNICATIONS IN MATHEMATICAL SCIENCES*
An, J., Ying, L.
2023; 21 (6): 1569-1588
- **When can Regression-Adjusted Control Variates Help? Rare Events, Sobolev Embedding and Minimax Optimality**
Blanchet, J., Chen, H., Lu, Y., Ying, L.
edited by Oh, A., Neumann, T., Globerson, A., Saenko, K., Hardt, M., Levine, S.
NEURAL INFORMATION PROCESSING SYSTEMS (NIPS).2023
- **ANNEALED IMPORTANCE SAMPLING FOR ISING MODELS WITH MIXED BOUNDARY CONDITIONS*** *JOURNAL OF COMPUTATIONAL MATHEMATICS*
Ying, L.
2023; 41 (3): 526-534
- **COMBINING RESAMPLING AND REWEIGHTING FOR FAITHFUL STOCHASTIC OPTIMIZATION** *COMMUNICATIONS IN MATHEMATICAL SCIENCES*
An, J., Ying, L.
2023; 21 (6): 1569-1588
- **Continuous-in-time Limit for Bayesian Bandits** *JOURNAL OF MACHINE LEARNING RESEARCH*
Zhu, Y., Izzo, Z., Ying, L.
2023; 24
- **OPERATOR SHIFTING FOR MODEL-BASED POLICY EVALUATION** *COMMUNICATIONS IN MATHEMATICAL SCIENCES*
Tang, X., Ying, L., Zhu, Y.
2023; 21 (8): 2169-2193
- **Analytic continuation from limited noisy Matsubara data** *JOURNAL OF COMPUTATIONAL PHYSICS*
Ying, L.
2022; 469
- **Stable factorization for phase factors of quantum signal processing** *QUANTUM*
Ying, L.
2022; 6
- **Pole Recovery From Noisy Data on Imaginary Axis** *JOURNAL OF SCIENTIFIC COMPUTING*
Ying, L.
2022; 92 (3)
- **A Riemannian mean field formulation for two-layer neural networks with batch normalization** *RESEARCH IN THE MATHEMATICAL SCIENCES*
Ma, C., Ying, L.
2022; 9 (3)

- **On Lyapunov functions and particle methods for regularized minimax problems** *RESEARCH IN THE MATHEMATICAL SCIENCES*
Ying, L.
2022; 9 (2)
- **A semigroup method for high dimensional elliptic PDEs and eigenvalue problems based on neural networks** *JOURNAL OF COMPUTATIONAL PHYSICS*
Li, H., Ying, L.
2022; 453
- **A NOTE ON OPTIMIZATION FORMULATIONS OF MARKOV DECISION PROCESSES** *COMMUNICATIONS IN MATHEMATICAL SCIENCES*
Ying, L., Zhu, Y.
2022; 20 (3): 727-745
- **Operator Shifting for General Noisy Matrix Systems** *SIAM JOURNAL ON MATHEMATICS OF DATA SCIENCE*
Etter, P. A., Ying, L.
2022; 4 (4): 1320-1346
- **Solving optical tomography with deep learning** *ANNALS OF MATHEMATICAL SCIENCES AND APPLICATIONS*
Fan, Y., Ying, L.
2022; 7 (2): 195-220
- **How to Learn when Data Gradually Reacts to Your Model**
Izzo, Z., Zou, J., Ying, L.
edited by Camps-Valls, G., Ruiz, F. J., Valera
JMLR-JOURNAL MACHINE LEARNING RESEARCH.2022
- **Enterprise-Scale Search: Accelerating Inference for Sparse Extreme Multi-Label Ranking Trees**
Etter, P. A., Zhong, K., Yu, H., Ying, L., Dhillon, I., ACM
ASSOC COMPUTING MACHINERY.2022: 452-461
- **Solving inverse wave scattering with deep learning** *ANNALS OF MATHEMATICAL SCIENCES AND APPLICATIONS*
Fan, Y., Ying, L.
2022; 7 (1): 23-48
- **Approximate inversion of discrete Fourier integral operators** *JOURNAL OF COMPUTATIONAL PHYSICS*
Feliu-Faba, J., Ying, L.
2021; 446
- **Distributed-Memory H-Matrix Algebra I: Data Distribution and Matrix-Vector Multiplication** *CSIAM TRANSACTIONS ON APPLIED MATHEMATICS*
Li, Y., Poulson, J., Ying, L.
2021; 2 (3): 431-459
- **A simple multiscale method for mean field games** *JOURNAL OF COMPUTATIONAL PHYSICS*
Li, H., Fan, Y., Ying, L.
2021; 439
- **Solving parametric PDE problems with artificial neural networks** *EUROPEAN JOURNAL OF APPLIED MATHEMATICS*
Khoo, Y., Lu, J., Ying, L.
2021; 32 (3): 421-435
- **A Heuristic Independent Particle Approximation to Determinantal Point Processes** *JOURNAL OF SCIENTIFIC COMPUTING*
Ying, L.
2021; 87 (2)
- **Natural Gradient for Combined Loss Using Wavelets** *JOURNAL OF SCIENTIFIC COMPUTING*
Ying, L.
2021; 86 (2)

- **MULTILEVEL FINE-TUNING: CLOSING GENERALIZATION GAPS IN APPROXIMATION OF SOLUTION MAPS UNDER A LIMITED BUDGET FOR TRAINING DATA** *MULTISCALE MODELING & SIMULATION*
Li, Z., Fan, Y., Ying, L.
2021; 19 (1): 344–73
- **HIERARCHICAL LOW-RANK STRUCTURE OF PARAMETERIZED DISTRIBUTIONS** *COMMUNICATIONS IN MATHEMATICAL SCIENCES*
Qin, J., Ying, L.
2021; 19 (3): 865-874
- **A SHARP CONVERGENCE RATE FOR A MODEL EQUATION OF THE ASYNCHRONOUS STOCHASTIC GRADIENT DESCENT** *COMMUNICATIONS IN MATHEMATICAL SCIENCES*
Zhu, Y., Ying, L.
2021; 19 (3): 851-863
- **AN EFFICIENT DYNAMICAL LOW-RANK ALGORITHM FOR THE BOLTZMANN-BGK EQUATION CLOSE TO THE COMPRESSIBLE VISCOUS FLOW REGIME** *SIAM JOURNAL ON SCIENTIFIC COMPUTING*
Einkemmer, L., Hu, J., Ying, L.
2021; 43 (5): B1057-B1080
- **Top-k eXtreme Contextual Bandits with Arm Hierarchy**
Sen, R., Rakhlin, A., Ying, L., Kidambi, R., Foster, D., Hill, D., Dhillion, I. S.
edited by Meila, M., Zhang, T.
JMLR-JOURNAL MACHINE LEARNING RESEARCH.2021
- **ACHIEVING ADVERSARIAL ROBUSTNESS REQUIRES AN ACTIVE TEACHER** *JOURNAL OF COMPUTATIONAL MATHEMATICS*
Ma, C., Ying, L.
2021; 39 (6): 880-896
- **How to Learn when Data Reacts to Your Model: Performative Gradient Descent**
Izzo, Z., Ying, L., Zou, J.
edited by Meila, M., Zhang, T.
JMLR-JOURNAL MACHINE LEARNING RESEARCH.2021
- **ON THE GRADIENT FLOW STRUCTURE OF THE ISOTROPIC LANDAU EQUATION** *COMMUNICATIONS IN MATHEMATICAL SCIENCES*
An, J., Ying, L.
2021; 19 (8): 2319-2333
- **EFFICIENT CONSTRUCTION OF TENSOR RING REPRESENTATIONS FROM SAMPLING** *MULTISCALE MODELING & SIMULATION*
Khoo, Y., Lu, J., Ying, L.
2021; 19 (3): 1261-1284
- **Stochastic modified equations for the asynchronous stochastic gradient descent** *INFORMATION AND INFERENCE-A JOURNAL OF THE IMA*
An, J., Lu, J., Ying, L.
2020; 9 (4): 851–73
- **Hierarchical Interpolative Factorization Preconditioner for Parabolic Equations** *JOURNAL OF SCIENTIFIC COMPUTING*
Feliu-Faba, J., Ying, L.
2020; 85 (2)
- **Mirror Descent Algorithms for Minimizing Interacting Free Energy** *JOURNAL OF SCIENTIFIC COMPUTING*
Ying, L.
2020; 84 (3)
- **Meta-learning pseudo-differential operators with deep neural networks** *JOURNAL OF COMPUTATIONAL PHYSICS*
Feliu-Faba, J., Fan, Y., Ying, L.
2020; 408
- **Solving electrical impedance tomography with deep learning** *JOURNAL OF COMPUTATIONAL PHYSICS*
Fan, Y., Ying, L.

2020; 404

- **RECURSIVELY PRECONDITIONED HIERARCHICAL INTERPOLATIVE FACTORIZATION FOR ELLIPTIC PARTIAL DIFFERENTIAL EQUATIONS** *COMMUNICATIONS IN MATHEMATICAL SCIENCES*
Feliu-Faba, J., Ho, K. L., Ying, L.
2020; 18 (1): 91–108
- **A SIMPLE SOLVER FOR THE FRACTIONAL LAPLACIAN IN MULTIPLE DIMENSIONS** *SIAM JOURNAL ON SCIENTIFIC COMPUTING*
Minden, V., Ying, L.
2020; 42 (2): A878–A900
- **SEMIDEFINITE RELAXATION OF MULTIMARGINAL OPTIMAL TRANSPORT FOR STRICTLY CORRELATED ELECTRONS IN SECOND QUANTIZATION** *SIAM JOURNAL ON SCIENTIFIC COMPUTING*
Khoo, Y., Lin, L., Lindsey, M., Ying, L.
2020; 42 (6): B1462–B1489
- **ANALYTICAL LOW-RANK COMPRESSION VIA PROXY POINT SELECTION** *SIAM JOURNAL ON MATRIX ANALYSIS AND APPLICATIONS*
Ye, X., Xia, J., Ying, L.
2020; 41 (3): 1059–85
- **Hessian transport gradient flows** *RESEARCH IN THE MATHEMATICAL SCIENCES*
Li, W., Ying, L.
2019; 6 (4)
- **BCR-Net: A neural network based on the nonstandard wavelet form** *JOURNAL OF COMPUTATIONAL PHYSICS*
Fan, Y., Bohorquez, C., Ying, L.
2019; 384: 1–15
- **A multiscale neural network based on hierarchical nested bases** *RESEARCH IN THE MATHEMATICAL SCIENCES*
Fan, Y., Feliu-Faba, J., Lin, L., Ying, L., Zepeda-Nunez, L.
2019; 6 (2)
- **Simple, direct and efficient multi-way spectral clustering** *INFORMATION AND INFERENCE-A JOURNAL OF THE IMA*
Damle, A., Minden, V., Ying, L.
2019; 8 (1): 181–203
- **Fast algorithms for integral formulations of steady-state radiative transfer equation** *JOURNAL OF COMPUTATIONAL PHYSICS*
Fan, Y., An, J., Ying, L.
2019; 380: 191–211
- **Sparsifying preconditioner for the time-harmonic Maxwell's equations** *JOURNAL OF COMPUTATIONAL PHYSICS*
Liu, F., Ying, L.
2019; 376: 913–23
- **A MULTISCALE NEURAL NETWORK BASED ON HIERARCHICAL MATRICES** *MULTISCALE MODELING & SIMULATION*
Fan, Y., Lin, L., Ying, L., Zepeda-Nunez, L.
2019; 17 (4): 1189–1213
- **CONVEX RELAXATION APPROACHES FOR STRICTLY CORRELATED DENSITY FUNCTIONAL THEORY** *SIAM JOURNAL ON SCIENTIFIC COMPUTING*
Khoo, Y., Ying, L.
2019; 41 (4): B773–B795
- **Numerical methods for Kohn-Sham density functional theory** *ACTA NUMERICA*
Lin, L., Lu, J., Ying, L.
2019; 28: 405–539
- **SWITCHNET: A NEURAL NETWORK MODEL FOR FORWARD AND INVERSE SCATTERING PROBLEMS** *SIAM JOURNAL ON SCIENTIFIC COMPUTING*
Khoo, Y., Ying, L.
2019; 41 (5): A3182–A3201

- **SPARSIFY AND SWEEP: AN EFFICIENT PRECONDITIONER FOR THE LIPPMANN- SCHWINGER EQUATION** *SIAM JOURNAL ON SCIENTIFIC COMPUTING*
Liu, F., Ying, L.
2018; 40 (2): B379–B404
- **AN ENTROPIC FOURIER METHOD FOR THE BOLTZMANN EQUATION** *SIAM JOURNAL ON SCIENTIFIC COMPUTING*
Cai, Z., Fan, Y., Ying, L.
2018; 40 (5): A2858–A2882
- **SCDM-k: Localized orbitals for solids via selected columns of the density matrix** *JOURNAL OF COMPUTATIONAL PHYSICS*
Damle, A., Lin, L., Ying, L.
2017; 334: 1-15
- **ADAPTIVELY COMPRESSED POLARIZABILITY OPERATOR FOR ACCELERATING LARGE SCALE AB INITIO PHONON CALCULATIONS** *MULTISCALE MODELING & SIMULATION*
Lin, L., Xu, Z., Ying, L.
2017; 15 (1): 29-55
- **COMPUTING LOCALIZED REPRESENTATIONS OF THE KOHN-SHAM SUBSPACE VIA RANDOMIZATION AND REFINEMENT** *SIAM JOURNAL ON SCIENTIFIC COMPUTING*
Damle, A., Lin, L., Ying, L.
2017; 39 (6): B1178–B1198
- **TENSOR NETWORK SKELETONIZATION** *MULTISCALE MODELING & SIMULATION*
Ying, L.
2017; 15 (4): 1423–47
- **Hierarchical Interpolative Factorization for Elliptic Operators: Differential Equations** *COMMUNICATIONS ON PURE AND APPLIED MATHEMATICS*
Ho, K. L., Ying, L.
2016; 69 (8): 1415-1451
- **Hierarchical Interpolative Factorization for Elliptic Operators: Integral Equations** *COMMUNICATIONS ON PURE AND APPLIED MATHEMATICS*
Ho, K. L., Ying, L.
2016; 69 (7): 1314-1353
- **Sparsifying preconditioner for soliton calculations** *JOURNAL OF COMPUTATIONAL PHYSICS*
Lu, J., Ying, L.
2016; 315: 458-466
- **RECURSIVE SWEEPING PRECONDITIONER FOR THE THREE-DIMENSIONAL HELMHOLTZ EQUATION** *SIAM JOURNAL ON SCIENTIFIC COMPUTING*
Liu, F., Ying, L.
2016; 38 (2): A814-A832
- **A TECHNIQUE FOR UPDATING HIERARCHICAL SKELETONIZATION-BASED FACTORIZATIONS OF INTEGRAL OPERATORS** *MULTISCALE MODELING & SIMULATION*
Minden, V., Damle, A., Ho, K. L., Ying, L.
2016; 14 (1): 42-64
- **ADDITIVE SWEEPING PRECONDITIONER FOR THE HELMHOLTZ EQUATION** *MULTISCALE MODELING & SIMULATION*
Liu, F., Ying, L.
2016; 14 (2): 799-822
- **Low-rank one-step wave extrapolation for reverse time migration** *GEOPHYSICS*
Sun, J., Fomel, S., Ying, L.
2016; 81 (1): S39-S54
- **Compression of the electron repulsion integral tensor in tensor hypercontraction format with cubic scaling cost** *JOURNAL OF COMPUTATIONAL PHYSICS*

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- Lu, J., Ying, L.
2015; 302: 329-335
- **Quantitative Canvas Weave Analysis Using 2-D Synchrosqueezed Transforms Application of time-frequency analysis to art investigation** *IEEE SIGNAL PROCESSING MAGAZINE*
Yang, H., Lu, J., Brown, W. P., Daubechies, I., Ying, L.
2015; 32 (4): 55-63
 - **Compressed Representation of Kohn-Sham Orbitals via Selected Columns of the Density Matrix.** *Journal of chemical theory and computation*
Damle, A., Lin, L., Ying, L.
2015; 11 (4): 1463-9
 - **Compressed Representation of Kohn-Sham Orbitals via Selected Columns of the Density Matrix** *JOURNAL OF CHEMICAL THEORY AND COMPUTATION*
Damle, A., Lin, L., Ying, L.
2015; 11 (4): 1463-1469
 - **A fast algorithm for 3D azimuthally anisotropic velocity scan** *GEOPHYSICAL PROSPECTING*
Hu, J., Fomel, S., Ying, L.
2015; 63 (2): 368-377
 - **A FAST ALGORITHM FOR THE ENERGY SPACE BOSON BOLTZMANN COLLISION OPERATOR** *MATHEMATICS OF COMPUTATION*
Hu, J., Ying, L.
2015; 84 (291): 271-288
 - **SPARSIFYING PRECONDITIONER FOR PSEUDOSPECTRAL APPROXIMATIONS OF INDEFINITE SYSTEMS ON PERIODIC STRUCTURES** *MULTISCALE MODELING & SIMULATION*
Ying, L.
2015; 13 (2): 459-471
 - **A MULTISCALE BUTTERFLY ALGORITHM FOR MULTIDIMENSIONAL FOURIER INTEGRAL OPERATORS** *MULTISCALE MODELING & SIMULATION*
Li, Y., Yang, H., Ying, L.
2015; 13 (2): 614-631
 - **SPARSIFYING PRECONDITIONER FOR THE LIPPMANN-SCHWINGER EQUATION** *MULTISCALE MODELING & SIMULATION*
Ying, L.
2015; 13 (2): 644-660
 - **BUTTERFLY FACTORIZATION** *MULTISCALE MODELING & SIMULATION*
Li, Y., Yang, H., Martin, E. R., Ho, K. L., Ying, L.
2015; 13 (2): 714-732
 - **FAST DIRECTIONAL COMPUTATION OF HIGH FREQUENCY BOUNDARY INTEGRALS VIA LOCAL FFTs** *MULTISCALE MODELING & SIMULATION*
Ying, L.
2015; 13 (1): 423-439
 - **SPARSIFYING PRECONDITIONER FOR PSEUDOSPECTRAL APPROXIMATIONS OF INDEFINITE SYSTEMS ON PERIODIC STRUCTURES** *MULTISCALE MODELING & SIMULATION*
Ying, L.
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 - **A MULTISCALE BUTTERFLY ALGORITHM FOR MULTIDIMENSIONAL FOURIER INTEGRAL OPERATORS** *MULTISCALE MODELING & SIMULATION*
Li, Y., Yang, H., Ying, L.
2015; 13 (2): 614-631
 - **SWEEPING PRECONDITIONERS FOR ELASTIC WAVE PROPAGATION WITH SPECTRAL ELEMENT METHODS** *ESAIM-MATHEMATICAL MODELLING AND NUMERICAL ANALYSIS-MODELISATION MATHEMATIQUE ET ANALYSE NUMERIQUE*
Tsuji, P., Poulson, J., Engquist, B., Ying, L.

2014; 48 (2): 433-447

- **A fast nested dissection solver for Cartesian 3D elliptic problems using hierarchical matrices** *JOURNAL OF COMPUTATIONAL PHYSICS*
Schmitz, P. G., Ying, L.
2014; 258: 227-245
- **A PARALLEL BUTTERFLY ALGORITHM** *SIAM JOURNAL ON SCIENTIFIC COMPUTING*
Poulson, J., Demanet, L., Maxwell, N., Ying, L.
2014; 36 (1): C49-C65
- **POLE EXPANSION FOR SOLVING A TYPE OF PARAMETRIZED LINEAR SYSTEMS IN ELECTRONIC STRUCTURE CALCULATIONS** *SIAM JOURNAL ON SCIENTIFIC COMPUTING*
Damle, A., Lin, L., Ying, L.
2014; 36 (6): A2929-A2951
- **A PARALLEL DIRECTIONAL FAST MULTIPOLE METHOD** *SIAM JOURNAL ON SCIENTIFIC COMPUTING*
Benson, A. R., Poulson, J., Tran, K., Engquist, B., Ying, L.
2014; 36 (4): C335-C352
- **SYNCHROSQUEEZED CURVELET TRANSFORM FOR TWO-DIMENSIONAL MODE DECOMPOSITION** *SIAM JOURNAL ON MATHEMATICAL ANALYSIS*
Yang, H., Ying, L.
2014; 46 (3): 2052-2083
- **A fast butterfly algorithm for generalized Radon transforms** *GEOPHYSICS*
Hu, J., Fomel, S., Demanet, L., Ying, L.
2013; 78 (4): T141-T151
- **Synchrosqueezed Wave Packet Transform for 2D Mode Decomposition** *SIAM JOURNAL ON IMAGING SCIENCES*
Yang, H., Ying, L.
2013; 6 (4): 1979-2009
- **Wave atoms and time upscaling of wave equations** *NUMERISCHE MATHEMATIK*
Demanet, L., Ying, L.
2009; 113 (1): 1-71
- **A FAST BUTTERFLY ALGORITHM FOR THE COMPUTATION OF FOURIER INTEGRAL OPERATORS** *MULTISCALE MODELING & SIMULATION*
Candes, E., Demanet, L., Ying, L.
2009; 7 (4): 1727-1750
- **Wave atoms and sparsity of oscillatory patterns** *APPLIED AND COMPUTATIONAL HARMONIC ANALYSIS*
Demanet, L., Ying, L.
2007; 23 (3): 368-387
- **Curvelets and wave atoms for mirror-extended images** *Conference on Wavelets XII*
Demanet, L., Ying, L.
SPIE-INT SOC OPTICAL ENGINEERING.2007
- **Fast computation of Fourier integral operators** *SIAM JOURNAL ON SCIENTIFIC COMPUTING*
Candes, E., Demanet, L., Ying, L.
2007; 29 (6): 2464-2493
- **Fast discrete curvelet transforms** *MULTISCALE MODELING & SIMULATION*
Candes, E., Demanet, L., Donoho, D., Ying, L.
2006; 5 (3): 861-899