Panayot S Vassilevski

List of Publications by Year
in descending order

82 papers	1,793 citations	279701 23 h-index	302012 39 g-index
82 all docs	82 docs citations	82 times ranked	620 citing authors

#	Article	IF	Citations
1	On Generalizing the Algebraic Multigrid Framework. SIAM Journal on Numerical Analysis, 2004, 42, 1669-1693.	1.1	107
2	AMGE Based on Element Agglomeration. SIAM Journal of Scientific Computing, 2001, 23, 109-133.	1.3	101
3	Recursive Krylovâ€based multigrid cycles. Numerical Linear Algebra With Applications, 2008, 15, 473-487.	0.9	84
4	On two-grid convergence estimates. Numerical Linear Algebra With Applications, 2005, 12, 471-494.	0.9	72
5	On Two Ways of Stabilizing the Hierarchical Basis Multilevel Methods. SIAM Review, 1997, 39, 18-53.	4.2	70
6	Stabilizing the Hierarchical Basis by Approximate Wavelets, I: Theory. Numerical Linear Algebra With Applications, 1997, 4, 103-126.	0.9	65
7	Mixed Covolume Methods for Elliptic Problems on Triangular Grids. SIAM Journal on Numerical Analysis, 1998, 35, 1850-1861.	1.1	60
8	Mixed finite element methods for incompressible flow: Stationary Stokes equations. Numerical Methods for Partial Differential Equations, 2010, 26, 957-978.	2.0	59
9	Two-level preconditioning of discontinuous Galerkin approximations of second-order elliptic equations. Numerical Linear Algebra With Applications, 2006, 13, 753-770.	0.9	57
10	Multilevel iterative methods for mixed finite element discretizations of elliptic problems. Numerische Mathematik, 1992, 63, 503-520.	0.9	56
11	Element-Free AMGe: General Algorithms for Computing Interpolation Weights in AMG. SIAM Journal of Scientific Computing, 2001, 23, 629-650.	1.3	54
12	A general mixed covolume framework for constructing conservative schemes for elliptic problems. Mathematics of Computation, 1999, 68, 991-1012.	1.1	53
13	Stabilizing the Hierarchical Basis by Approximate Wavelets II: Implementation and Numerical Results. SIAM Journal of Scientific Computing, 1998, 20, 490-514.	1.3	51
14	General Constrained Energy Minimization Interpolation Mappings for AMG. SIAM Journal of Scientific Computing, 2010, 32, 1-13.	1.3	46
15	Interior penalty preconditioners for mixed finite element approximations of elliptic problems. Mathematics of Computation, 1996, 65, 447-467.	1.1	45
16	Parallel Auxiliary Space AMG Solver for $H(div)$ Problems. SIAM Journal of Scientific Computing, 2012, 34, A3079-A3098.	1.3	40
17	Preconditioning Mixed Finite Element Saddle-point Elliptic Problems. Numerical Linear Algebra With Applications, 1996, 3, 1-20.	0.9	39
18	A Mixed Formulation for the Brinkman Problem. SIAM Journal on Numerical Analysis, 2014, 52, 258-281.	1.1	33

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19	Exact de Rham Sequences of Spaces Defined on Macro-Elements in Two and Three Spatial Dimensions. SIAM Journal of Scientific Computing, 2008, 30, 2427-2446.	1.3	29
20	Multilevel Methods for Elliptic Problems with Highly Varying Coefficients on Nonaligned Coarse Grids. SIAM Journal on Numerical Analysis, 2012, 50, 1675-1694.	1.1	29
21	Adaptive AMG with coarsening based on compatible weighted matching. Computing and Visualization in Science, 2013, 16, 59-76.	1.2	28
22	An Application of the Abstract Multilevel Theory to Nonconforming Finite Element Methods. SIAM Journal on Numerical Analysis, 1995, 32, 235-248.	1.1	26
23	Mixed Upwinding Covolume Methods on Rectangular Grids for Convection-Diffusion Problems. SIAM Journal of Scientific Computing, 1999, 21, 145-165.	1.3	25
24	Weak Approximation Properties of Elliptic Projections with Functional Constraints. Multiscale Modeling and Simulation, 2011, 9, 1677-1699.	0.6	25
25	A Block-Diagonal Algebraic Multigrid Preconditioner for the Brinkman Problem. SIAM Journal of Scientific Computing, 2013, 35, S3-S17.	1.3	25
26	On some versions of the element agglomeration AMGe method. Numerical Linear Algebra With Applications, 2008, 15, 595-620.	0.9	23
27	Algebraic Multilevel Preconditioning of Anisotropic Elliptic Problems. SIAM Journal of Scientific Computing, 1994, 15, 1026-1037.	1.3	22
28	Sparse matrix element topology with application to AMG(e) and preconditioning. Numerical Linear Algebra With Applications, 2002, 9, 429-444.	0.9	22
29	An improved convergence analysis of smoothed aggregation algebraic multigrid. Numerical Linear Algebra With Applications, 2012, 19, 441-469.	0.9	22
30	Arbitrary dimension convectionâ€“diffusion schemes for spaceâ€“time discretizations. Journal of Computational and Applied Mathematics, 2017, 310, 19-31.	1.1	22
31	A framework for block ILU factorizations using block-size reduction. Mathematics of Computation, 1995, 64, 129-129.	1.1	20
32	The Construction of the Coarse de Rham Complexes with Improved Approximation Properties. Computational Methods in Applied Mathematics, 2014, 14, 257-303.	0.4	20
33	AMG by element agglomeration and constrained energy minimization interpolation. Numerical Linear Algebra With Applications, 2006, 13, 771-788.	0.9	18
34	A Multilevel, Hierarchical Sampling Technique for Spatially Correlated Random Fields. SIAM Journal of Scientific Computing, 2017, 39, S543-S562.	1.3	18
35	BootCMatch. ACM Transactions on Mathematical Software, 2018, 44, 1-25.	1.6	18
36	Spectral Element Agglomerate Algebraic Multigrid Methods for Elliptic Problems with High-Contrast Coefficients. Lecture Notes in Computational Science and Engineering, 2011, , 407-414.	0.1	18

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37	COARSE SPACES BY ALGEBRAIC MULTIGRID: MULTIGRID CONVERGENCE AND UPSCALING ERROR ESTIMATES. Advances in Adaptive Data Analysis, 2011, 03, 229-249.	0.6	16
38	Monotone multigrid methods based on element agglomeration coarsening away from the contact boundary for the Signorini's problem. Numerical Linear Algebra With Applications, 2004, 11, 189-204.	0.9	15
39	H(curl) auxiliary mesh preconditioning. Numerical Linear Algebra With Applications, 2008, 15, 455-471.	0.9	14
40	Domain Decomposition Type Iterative Techniques for Parabolic Problems on Locally Refined Grids. SIAM Journal on Numerical Analysis, 1993, 30, 1537-1557.	1.1	13
41	On Mesh-Independent Convergence of an Inexact Newton--Multigrid Algorithm. SIAM Journal of Scientific Computing, 2003, 25, 570-590.	1.3	13
42	Scalable hierarchical PDE sampler for generating spatially correlated random fields using nonmatching meshes. Numerical Linear Algebra With Applications, 2018, 25, e2146.	0.9	12
43	Multiple Vector Preserving Interpolation Mappings in Algebraic Multigrid. SIAM Journal on Matrix Analysis and Applications, 2006, 27, 1040-1055.	0.7	11
44	Comparative Convergence Analysis of Nonlinear AMLI-Cycle Multigrid. SIAM Journal on Numerical Analysis, 2013, 51, 1349-1369.	1.1	11
45	Space-time discretizations using constrained first-order system least squares (CFOSLS). Journal of Computational Physics, 2018, 373, 863-876.	1.9	10
46	Preconditioning Mixed Finite Element Saddleâ€point Elliptic Problems. Numerical Linear Algebra With Applications, 1996, 3, 1-20.	0.9	10
47	Vectorizable preconditioners for mixed finite element solution of second-order elliptic problems. International Journal of Computer Mathematics, 1992, 44, 313-327.	1.0	9
48	Spectral Element Agglomerate AMGe. , 2007, , 513-521.		9
49	A twoâ€grid SAâ€AMG convergence bound that improves when increasing the polynomial degree. Numerical Linear Algebra With Applications, 2016, 23, 746-771.	0.9	8
50	Spectral Upscaling for Graph Laplacian Problems with Application to Reservoir Simulation. SIAM Journal of Scientific Computing, 2017, 39, S323-S346.	1.3	8
51	Nonlinear multigrid solvers exploiting AMGe coarse spaces with approximation properties. Journal of Computational and Applied Mathematics, 2018, 340, 691-708.	1.1	8
52	Smoothed Aggregation Spectral Element Agglomeration AMG: SA-ÏAMGe. Lecture Notes in Computer Science, 2012, , 3-15.	1.0	8
53	Preconditioning Capacitance Matrix Problems in Domain Imbedding. SIAM Journal of Scientific Computing, 1994, 15, 77-88.	1.3	7
54	Iterative solution of a coupled mixed and standard Galerkin discretization method for elliptic problems. Numerical Linear Algebra With Applications, 2001, 8, 13-31.	0.9	7

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55	Improving the Communication Pattern in Matrix-Vector Operations for Large Scale-Free Graphs by Disaggregation. SIAM Journal of Scientific Computing, 2013, 35, S465-S486.	1.3	7
56	Computation of Constants in the Strengthened Cauchy Inequality for Elliptic Bilinear Forms with Anisotropy. SIAM Journal on Scientific and Statistical Computing, 1992, 13, 655-665.	1.5	6
57	An upwinding cell-centered method with piecewise constant velocity over covolumes. Numerical Methods for Partial Differential Equations, 1999, 15, 49-62.	2.0	6
58	Commuting projections on graphs. Numerical Linear Algebra With Applications, 2014, 21, 297-315.	0.9	6
59	Numerical Multilevel Upscaling for Incompressible Flow in Reservoir Simulation: An Element-Based Algebraic Multigrid (AMGe) Approach. SIAM Journal of Scientific Computing, 2017, 39, B102-B137.	1.3	6
60	Improving solve time of aggregationâ€based adaptive AMG. Numerical Linear Algebra With Applications, 2019, 26, e2269.	0.9	6
61	Domain embedding preconditioners for mixed systems. Numerical Linear Algebra With Applications, 1998, 5, 321-345.	0.9	5
62	Eigenvalue Problems for Exponential-Type Kernels. Computational Methods in Applied Mathematics, 2020, 20, 61-78.	0.4	5
63	Nonlinear multigrid based on local spectral coarsening for heterogeneous diffusion problems. Computer Methods in Applied Mechanics and Engineering, 2020, 372, 113432.	3.4	5
64	Parallel Solver for $$oldsymbol{H}$$ (div) Problems Using Hybridization and AMG. Lecture Notes in Computational Science and Engineering, 2017, , 69-80.	0.1	5
65	Performance of Block-ILU Factorization Preconditioners Based on Block-Size Reduction for 2D Elasticity Systems. SIAM Journal of Scientific Computing, 1997, 18, 1355-1366.	1.3	4
66	An element agglomeration nonlinear additive Schwarz preconditioned Newton method for unstructured finite element problems. Applications of Mathematics, 2005, 50, 247-275.	0.9	4
67	Bootstrap AMG for spectral clustering. Computational and Mathematical Methods, 2019, 1, e1020.	0.3	4
68	Numerical results for adaptive (negative norm) constrained first order system least squares formulations. Computers and Mathematics With Applications, 2021, 95, 256-270.	1.4	4
69	Estimating posterior quantity of interest expectations in a multilevel scalable framework. Numerical Linear Algebra With Applications, 2021, 28, e2352.	0.9	4
70	Auxiliary Space Preconditioning of Finite Element Equations Using a Nonconforming Interior Penalty Reformulation and Static Condensation. SIAM Journal of Scientific Computing, 2020, 42, A1741-A1764.	1.3	3
71	Multilevel graph embedding. Numerical Linear Algebra With Applications, 2021, 28, e2326.	0.9	3
72	Î±AMG Based on Weighted Matching for Systems of Elliptic PDEs Arising from Displacement and Mixed Methods. Mathematics in Industry, 2016, , 1013-1020.	0.1	3

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73	Wavelet-Like Methods in the Design of Efficient Multilevel Preconditioners for Elliptic PDEs. Wavelet Analysis and Its Applications, 1997, 6, 59-105.	0.2	2
74	Accurate Coarse-Scale AMG-Based Finite Volume Reservoir Simulations in Highly Heterogeneous Media. , 2015, , .		2
75	Solving Graph Laplacian Systems Through Recursive Partitioning and Two-Grid Preconditioning. SIAM Journal on Matrix Analysis and Applications, 2017, 38, 621-648.	0.7	2
76	Modifying AMG Coarse Spaces with Weak Approximation Property to Exhibit Approximation in Energy Norm. SIAM Journal on Matrix Analysis and Applications, 2019, 40, 1131-1152.	0.7	2
77	Multilevel Spectral Coarsening for Graph Laplacian Problems with Application to Reservoir Simulation. SIAM Journal of Scientific Computing, 2021, 43, A2737-A2765.	1.3	2
78	Multilevel Hierarchical Decomposition of Finite Element White Noise with Application to Multilevel Markov Chain Monte Carlo. SIAM Journal of Scientific Computing, 0, , S293-S316.	1.3	2
79	Nonlinear Schwarz-FAS methods for unstructured finite element elliptic problems. , 2003, , 2008-2011.		2
80	Two-Level Local Refinement Preconditioners for Nonsymmetric and Indefinite Elliptic Problems. SIAM Journal of Scientific Computing, 1994, 15, 149-163.	1.3	1
81	Preconditioning Nonsymmetric and Indefinite Capacitance Matrix Problems in Domain Imbedding. SIAM Journal of Scientific Computing, 1995, 16, 414-430.	1.3	1
82	Space-Time CFOSLS Methods with AMGe Upscaling. Lecture Notes in Computational Science and Engineering, 2017, , 253-260.	0.1	0