Jan M Nordbotten

List of Publications by Year
in descending order

151 papers	6,289 citations	76326 40 h-index	76900 74 g-index
167 all docs	167 docs citations	167 times ranked	3304 citing authors

#	Article	IF	Citations
1	Modeling the Process of Speciation Using a Multiscale Framework Including A Posteriori Error Estimates. SIAM Journal on Applied Mathematics, 2022, 82, 450-475.	1.8	0
2	Guaranteed and computable error bounds for approximations constructed by an iterative decoupling of the Biot problem. Computers and Mathematics With Applications, 2021, 91, 122-149.	2.7	4
3	Functional analysis and exterior calculus on mixed-dimensional geometries. Annali Di Matematica Pura Ed Applicata, 2021, 200, 757-789.	1.0	15
4	Iterative solvers for Biot model under small and large deformations. Computational Geosciences, 2021, 25, 687-699.	2.4	6
5	Stable mixed finite elements for linear elasticity with thin inclusions. Computational Geosciences, 2021, 25, 603-620.	2.4	3
6	A combined finite elementâ€“finite volume framework for phase-field fracture. Computer Methods in Applied Mechanics and Engineering, 2021, 373, 113474.	6.6	9
7	A multipoint stress mixed finite element method for elasticity on quadrilateral grids. Numerical Methods for Partial Differential Equations, 2021, 37, 1886-1915.	3.6	3
8	An Introduction to Multi-point Flux (MPFA) and Stress (MPSA) Finite Volume Methods for Thermo-poroelasticity. SEMA SIMAI Springer Series, 2021, , 119-158.	0.7	8
9	A Mixed Approach to the Poisson Problem with Line Sources. SIAM Journal on Numerical Analysis, 2021, 59, 1117-1139.	2.3	3
10	A minimalist model for coevolving supply and drainage networks. Royal Society Open Science, 2021, 8, 201407.	2.4	1
11	Modeling and discretization of flow in porous media with thin, fullâ€tensor permeability inclusions. International Journal for Numerical Methods in Engineering, 2021, 122, 4730-4750.	2.8	2
12	An accelerated staggered scheme for variational phase-field models of brittle fracture. Computer Methods in Applied Mechanics and Engineering, 2021, 381, 113822.	6.6	25
13	Robust Linear Domain Decomposition Schemes for Reduced Nonlinear Fracture Flow Models. SIAM Journal on Numerical Analysis, 2021, 59, 583-612.	2.3	1
14	Well-Posedness and Discretization for a Class of Models for Mixed-Dimensional Problems with High-Dimensional Gap. SIAM Journal on Applied Mathematics, 2021, 81, 2218-2245.	1.8	3
15	A Multi-Scale Flow Model for Studying Blood Circulation in Vascular System. Lecture Notes in Computational Science and Engineering, 2021, , 743-751.	0.3	0
16	A Cahn-Hilliard-Biot system and its generalized gradient flow structure. Applied Mathematics Letters, 2021, 126, 107799.	2.7	3
17	A nonlinear multi-scale model for blood circulation in a realistic vascular system. Royal Society Open Science, 2021, 8, 201949.	2.4	4
18	Temperature-Dependent Bending Rigidity of AB -Stacked Bilayer Graphene. Physical Review Letters, 2021, 127, 266102.	7.8	3

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19	Finite volume discretization for poroelastic media with fractures modeled by contact mechanics. International Journal for Numerical Methods in Engineering, 2020, 121, 644-663.	2.8	43
20	Adaptive asynchronous time-stepping, stopping criteria, and a posteriori error estimates for fixed-stress iterative schemes for coupled poromechanics problems. Journal of Computational and Applied Mathematics, 2020, 364, 112312.	2.0	19
21	A singularity removal method for coupled 1Dâ€“3D flow models. Computational Geosciences, 2020, 24, 443-457.	2.4	22
22	An iterative staggered scheme for phase field brittle fracture propagation with stabilizing parameters. Computer Methods in Applied Mechanics and Engineering, 2020, 361, 112752.	6.6	18
23	The dynamics of trait variance in multi-species communities. Royal Society Open Science, 2020, 7, 200321.	2.4	7
24	Monolithic and splitting solution schemes for fully coupled quasi-static thermo-poroelasticity with nonlinear convective transport. Computers and Mathematics With Applications, 2020, 80, 1964-1984.	2.7	18
25	A Multipoint Stress Mixed Finite Element Method for Elasticity on Simplicial Grids. SIAM Journal on Numerical Analysis, 2020, 58, 630-656.	2.3	14
26	Convergence of a TPFA Finite Volume Scheme for Mixed-Dimensional Flow Problems. Springer Proceedings in Mathematics and Statistics, 2020, , 435-444.	0.2	0
27	Free Energy Diminishing Discretization of Darcy-Forchheimer Flow in Poroelastic Media. Springer Proceedings in Mathematics and Statistics, 2020, , 203-211.	0.2	3
28	Anderson accelerated fixed-stress splitting schemes for consolidation of unsaturated porous media. Computers and Mathematics With Applications, 2019, 77, 1479-1502.	2.7	42
29	Splitting method for elliptic equations with line sources. ESAIM: Mathematical Modelling and Numerical Analysis, 2019, 53, 1715-1739.	1.9	17
30	A new framework for assessing subject-specific whole brain circulation and perfusion using MRI-based measurements and a multi-scale continuous flow model. PLoS Computational Biology, 2019, 15, e1007073.	3.2	24
31	On the optimization of the fixedâ€stress splitting for Biot's equations. International Journal for Numerical Methods in Engineering, 2019, 120, 179-194.	2.8	31
32	Mathematics and Medicine: How Mathematics, Modelling and Simulations Can Lead to Better Diagnosis and Treatments. Lecture Notes in Computational Science and Engineering, 2019, , 65-80.	0.3	0
33	Consistent MPFA Discretization for Flow in the Presence of Gravity. Water Resources Research, 2019, 55, 10105-10118.	4.2	3
34	In Vivo Detection of Chronic Kidney Disease Using Tissue Deformation Fields From Dynamic MR Imaging. IEEE Transactions on Biomedical Engineering, 2019, 66, 1779-1790.	4.2	17
35	Unified approach to discretization of flow in fractured porous media. Computational Geosciences, 2019, 23, 225-237.	2.4	62
36	Adaptive poromechanics computations based on a posteriori error estimates for fully mixed formulations of Biotâ€™s consolidation model. Computer Methods in Applied Mechanics and Engineering, 2019, 347, 264-294.	6.6	21

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37	Iterative Linearisation Schemes for Doubly Degenerate Parabolic Equations. Lecture Notes in Computational Science and Engineering, 2019, , 49-63.	0.3	2
38	Well-posedness of the fully coupled quasi-static thermo-poroelastic equations with nonlinear convective transport. Journal of Mathematical Analysis and Applications, 2019, 471, 239-266.	1.0	13
39	A heterogeneous multiscale MPFA method for single-phase flows in porous media with inertial effects. Computational Geosciences, 2019, 23, 107-126.	2.4	1
40	A finite-volume discretization for deformation of fractured media. Computational Geosciences, 2018, 22, 993-1007.	2.4	19
41	Robust iterative schemes for non-linear poromechanics. Computational Geosciences, 2018, 22, 1021-1038.	2.4	40
42	Comparison between cell-centered and nodal-based discretization schemes for linear elasticity. Computational Geosciences, 2018, 22, 233-260.	2.4	24
43	Ecological and evolutionary dynamics of interconnectedness and modularity. Proceedings of the National Academy of Sciences of the United States of America, 2018, 115, 750-755.	7.1	10
44	A robust, mass conservative scheme for two-phase flow in porous media including HÃ¶lder continuous nonlinearities. IMA Journal of Numerical Analysis, 2018, 38, 884-920.	2.9	37
45	High-accuracy phase-field models for brittle fracture based on a new family of degradation functions. Journal of the Mechanics and Physics of Solids, 2018, 111, 458-489.	4.8	140
46	Heterogeneity preserving upscaling for heat transport in fractured geothermal reservoirs. Computational Geosciences, 2018, 22, 451-467.	2.4	11
47	Upscaling of the Coupling of Hydromechanical and Thermal Processes in a Quasi-static Poroelastic Medium. Transport in Porous Media, 2018, 124, 137-158.	2.6	11
48	Robust Discretization of Flow in Fractured Porous Media. SIAM Journal on Numerical Analysis, 2018, 56, 2203-2233.	2.3	91
49	Modeling, Structure and Discretization of Hierarchical Mixed-Dimensional Partial Differential Equations. Lecture Notes in Computational Science and Engineering, 2018, , 87-101.	0.3	6
50	Analytical solutions for aquifer thermal energy storage. Water Resources Research, 2017, 53, 1354-1368.	4.2	9
51	Finite volume methods for elasticity with weak symmetry. International Journal for Numerical Methods in Engineering, 2017, 112, 939-962.	2.8	57
52	Robust fixed stress splitting for Biotâ€™s equations in heterogeneous media. Applied Mathematics Letters, 2017, 68, 101-108.	2.7	83
53	Fractal structures in freezing brine. Journal of Fluid Mechanics, 2017, 826, 975-995.	3.4	0
54	A 3-D numerical model of the influence of meanders on groundwater discharge to a gaining stream in an unconfined sandy aquifer. Journal of Hydrology, 2017, 552, 168-181.	5.4	20

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55	On the Properties of the Parameter Space of the Generalized Continuum Transport Model for Description of Fluid Flow in Porous Networks. Transport in Porous Media, 2017, 119, 673-688.	2.6	1
56	Modeling and Simulation of Microbial Enhanced Oil Recovery Including Interfacial Area. Transport in Porous Media, 2017, 120, 395-413.	2.6	21
57	Efficient water table evolution discretization using domain transformation. Computational Geosciences, 2017, 21, 3-11.	2.4	1
58	Iterative Methods for Coupled Flow and Geomechanics in Unsaturated Porous Media. , 2017, , .		4
59	Stable Cell-Centered Finite Volume Discretization for Biot Equations. SIAM Journal on Numerical Analysis, 2016, 54, 942-968.	2.3	68
60	A multiscale multilayer vertically integrated model with vertical dynamics for CO₂ sequestration in layered geological formations. Water Resources Research, 2016, 52, 6490-6505.	4.2	20
61	Vertically integrated models for coupled twoâ€phase flow and geomechanics in porous media. Water Resources Research, 2016, 52, 1398-1417.	4.2	16
62	Two-Scale Preconditioning for Two-Phase Nonlinear Flows in Porous Media. Transport in Porous Media, 2016, 114, 485-503.	2.6	11
63	Rayleighâ€“Taylor instability of immiscible fluids in porous media. Continuum Mechanics and Thermodynamics, 2016, 28, 721-731.	2.2	6
64	Asymmetric ecological conditions favor Red-Queen type of continued evolution over stasis. Proceedings of the National Academy of Sciences of the United States of America, 2016, 113, 1847-1852.	7.1	26
65	Physical Models for Simulation and Reconstruction of Human Tissue Deformation Fields in Dynamic MRI. IEEE Transactions on Biomedical Engineering, 2016, 63, 2200-2210.	4.2	10
66	Plant biomass and soil moisture dynamics: analytical results. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2015, 471, 20150179.	2.1	11
67	Convergence of a Cell-Centered Finite Volume Discretization for Linear Elasticity. SIAM Journal on Numerical Analysis, 2015, 53, 2605-2625.	2.3	44
68	Incorporating Geological Uncertainty in Error Control for Linear Solvers. , 2015, , .		2
69	Full Pressure Coupling for Geo-mechanical Multi-phase Multi-component Flow Simulations. , 2015, , .		7
70	Status of CO₂storage in deep saline aquifers with emphasis on modeling approaches and practical simulations. Water Resources Research, 2015, 51, 6846-6892.	4.2	216
71	Inexact linear solvers for control volume discretizations in porous media. Computational Geosciences, 2015, 19, 159-176.	2.4	5
72	A robust linearization scheme for finite volume based discretizations for simulation of two-phase flow in porous media. Journal of Computational and Applied Mathematics, 2015, 289, 134-141.	2.0	57

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73	Non-standard shocks in the Buckleyâ€“Leverett equation. Journal of Mathematical Analysis and Applications, 2015, 428, 882-895.	1.0	5
74	Capturing the coupled hydro-mechanical processes occurring during CO2 injection â€“ example from In Salah. Energy Procedia, 2014, 63, 3416-3424.	1.8	3
75	Analysis of Control Volume Heterogeneous Multiscale Methods for Single Phase Flow in Porous Media. Multiscale Modeling and Simulation, 2014, 12, 335-363.	1.6	15
76	Dynamics of the interface between immiscible liquids of different densities with low Froude number. Nonlinear Analysis: Real World Applications, 2014, 15, 361-366.	1.7	3
77	Physics-based preconditioners for flow in fractured porous media. Water Resources Research, 2014, 50, 1357-1373.	4.2	16
78	Finite volume hydromechanical simulation in porous media. Water Resources Research, 2014, 50, 4379-4394.	4.2	27
79	Analytical solutions for twoâ€phase subsurface flow to a leaky fault considering vertical flow effects and fault properties. Water Resources Research, 2014, 50, 3536-3552.	4.2	15
80	Cellâ€centered finite volume discretizations for deformable porous media. International Journal for Numerical Methods in Engineering, 2014, 100, 399-418.	2.8	58
81	Convective mixing influenced by the capillary transition zone. Computational Geosciences, 2014, 18, 417-431.	2.4	30
82	Impact of capillary hysteresis and trapping on vertically integrated models for CO2 storage. Advances in Water Resources, 2013, 62, 465-474.	3.8	30
83	Auxiliary variables for 3D multiscale simulations in heterogeneous porous media. Journal of Computational Physics, 2013, 238, 141-153.	3.8	8
84	Efficient simulation of geothermal processes in heterogeneous porous media based on the exponential Rosenbrockâ€“Euler and Rosenbrock-type methods. Advances in Water Resources, 2013, 53, 250-262.	3.8	27
85	Domain decomposition strategies for nonlinear flow problems in porous media. Journal of Computational Physics, 2013, 234, 439-451.	3.8	50
86	Instant convolution shadows for volumetric detail mapping. ACM Transactions on Graphics, 2013, 32, 1-18.	7.2	12
87	Influence of natural convection in a porous medium when producing from borehole heat exchangers. Water Resources Research, 2013, 49, 4927-4938.	4.2	8
88	Influence of capillary pressure and trapping hysteresis on large-scale CO₂ migration. Journal of Coupled Systems and Multiscale Dynamics, 2013, 1, 442-458.	0.2	0
89	Effects of a capillary transition zone on the stability of a diffusive boundary layer. IMA Journal of Applied Mathematics, 2012, 77, 771-787.	1.6	56
90	Effect of Mean Network Coordination Number on Dispersivity Characteristics. Transport in Porous Media, 2012, 95, 447-463.	2.6	28

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91	Estimating effective rates of convective mixing from commercial-scale injection. Environmental Earth Sciences, 2012, 67, 527-535.	2.7	20
92	An ecohydrological approach to predicting hillslopeâ€scale vegetation patterns in dryland ecosystems. Water Resources Research, 2012, 48, .	4.2	25
93	A methodology to estimate maximum probable leakage along old wells in a geological sequestration operation. International Journal of Greenhouse Gas Control, 2012, 7, 39-47.	4.6	36
94	Initial evaluation of advantageous synergies associated with simultaneous brine production and CO2 geological sequestration. International Journal of Greenhouse Gas Control, 2012, 8, 90-100.	4.6	43
95	Application of simplified models to CO2 migration and immobilization in large-scale geological systems. International Journal of Greenhouse Gas Control, 2012, 9, 72-84.	4.6	57
96	Uncertainties in practical simulation of CO2 storage. International Journal of Greenhouse Gas Control, 2012, 9, 234-242.	4.6	84
97	Applicability of vertical-equilibrium and sharp-interface assumptions in CO2 sequestration modeling. International Journal of Greenhouse Gas Control, 2012, 10, 134-147.	4.6	66
98	Impact of top-surface morphology on CO2 storage capacity. International Journal of Greenhouse Gas Control, 2012, 11, 221-235.	4.6	34
99	Hysteretic upscaled constitutive relationships for vertically integrated porous media flow. Computing and Visualization in Science, 2012, 15, 147-161.	1.2	11
100	An efficient multi-point flux approximation method for Discrete Fractureâ€“Matrix simulations. Journal of Computational Physics, 2012, 231, 3784-3800.	3.8	227
101	Impact of the capillary fringe in vertically integrated models for CO₂ storage. Water Resources Research, 2011, 47, .	4.2	80
102	Vertically averaged approaches for CO₂ migration with solubility trapping. Water Resources Research, 2011, 47, .	4.2	106
103	Quantifying Transient Soil Moisture Dynamics Using Multipoint Directâ€Current Resistivity in Homogeneous Sand. Vadose Zone Journal, 2011, 10, 286-298.	2.2	5
104	Multiscale mass conservative domain decomposition preconditioners for elliptic problems on irregular grids. Computational Geosciences, 2011, 15, 587-602.	2.4	12
105	Numerical Simulation Studies of the Long-term Evolution of a CO2 Plume in a Saline Aquifer with a Sloping Caprock. Transport in Porous Media, 2011, 90, 135-151.	2.6	82
106	Detecting leakage of brine or CO2 through abandoned wells in a geological sequestration operation using pressure monitoring wells. Energy Procedia, 2011, 4, 3620-3627.	1.8	55
107	Field-case simulation of CO2 -plume migration using vertical-equilibrium models. Energy Procedia, 2011, 4, 3801-3808.	1.8	68
108	How simple can we make models for CO2 injection, migration, and leakage?. Energy Procedia, 2011, 4, 3857-3864.	1.8	24

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109	The impact of local-scale processes on large-scale CO2 migration and immobilization. Energy Procedia, 2011, 4, 3896-3903.	1.8	10
110	An efficient software framework for performing industrial risk assessment of leakage for geological storage of CO2. Energy Procedia, 2011, 4, 4207-4214.	1.8	12
111	Active and integrated management of water resources throughout CO2 capture and sequestration operations. Energy Procedia, 2011, 4, 4221-4229.	1.8	31
112	SUCCESS: SUbsurface CO2 storageâ€“Critical elements and superior strategy. Energy Procedia, 2011, 4, 6117-6124.	1.8	5
113	Field-scale application of a semi-analytical model for estimation of CO2 and brine leakage along old wells. International Journal of Greenhouse Gas Control, 2011, 5, 257-269.	4.6	127
114	Linear and nonlinear convection in porous media between coaxial cylinders. Physics of Fluids, 2011, 23, .	4.0	19
115	Simulating Two-phase Flow in Porous Media with Anisotropic Relative Permeabilities. , 2011, , .		1
116	Vertically averaged approaches for CO2 migration with solubility trapping. , 2011, .		1
117	A New Finite-Volume Approach to Efficient Discretization on Challenging Grids. SPE Journal, 2010, 15, 658-669.	3.1	32
118	A Posteriori Error Estimates for Approximate Solutions of the Barenblatt-Biot Poroelastic Model. Computational Methods in Applied Mathematics, 2010, 10, 302-314.	0.8	7
119	Appropriate Choice of Average Pressure for Upscaling Relative Permeability in Dynamic Flow Conditions. SPE Journal, 2010, 15, 228-237.	3.1	5
120	An ecohydrological approach to predicting regional woody species distribution patterns in dryland ecosystems. Advances in Water Resources, 2010, 33, 215-230.	3.8	68
121	Hydrologic variability and its influence on longâ€term peat dynamics. Water Resources Research, 2010, 46, .	4.2	16
122	Variational and Heterogeneous Multiscale Methods. , 2010, , 713-720.		2
123	Vertical equilibrium with sub-scale analytical methods for geological CO2 sequestration. Computational Geosciences, 2009, 13, 469-481.	2.4	109
124	A benchmark study on problems related to CO2 storage in geologic formations. Computational Geosciences, 2009, 13, 409-434.	2.4	348
125	Practical Modeling Approaches for Geological Storage of Carbon Dioxide. Ground Water, 2009, 47, 627-638.	1.3	156
126	Sufficient criteria are necessary for monotone control volume methods. Applied Mathematics Letters, 2009, 22, 1178-1180.	2.7	43

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127	Risk of Leakage versus Depth of Injection in Geological Storage. Energy Procedia, 2009, 1, 2573-2580.	1.8	49
128	On reproducing uniform flow exactly on general hexahedral cells using one degree of freedom per surface. Advances in Water Resources, 2009, 32, 264-267.	3.8	4
129	Adaptive Variational Multiscale Methods for Multiphase Flow in Porous Media. Multiscale Modeling and Simulation, 2009, 7, 1455-1473.	1.6	25
130	Model for CO₂ Leakage Including Multiple Geological Layers and Multiple Leaky Wells. Environmental Science & Technology, 2009, 43, 743-749.	10.0	188
131	Multiscale Methods for Multiphase Flow in Porous Media. Lecture Notes in Computational Science and Engineering, 2009, , 39-50.	0.3	1
132	On the relationship between the multiscale finite-volume method and domain decomposition preconditioners. Computational Geosciences, 2008, 12, 367-376.	2.4	59
133	Determining effective wellbore permeability from a field pressure test: a numerical analysis of detection limits. Environmental Geology, 2008, 54, 1207-1215.	1.2	39
134	A compact multipoint flux approximation method with improved robustness. Numerical Methods for Partial Differential Equations, 2008, 24, 1329-1360.	3.6	175
135	Stability analysis of probabilistic soil moisture dynamics. Advances in Water Resources, 2008, 31, 418-423.	3.8	1
136	On the definition of macroscale pressure for multiphase flow in porous media. Water Resources Research, 2008, 44, .	4.2	35
137	Upslope plume migration and implications for geological CO₂ sequestration in deep, saline aquifers. IES Journal Part A: Civil and Structural Engineering, 2008, 1, 2-16.	0.4	21
138	A New Finite-Volume Approach to Efficient Discretization on Challenging Grids. , 2007, , .		10
139	Stochastic coupling of rainfall and biomass dynamics. Water Resources Research, 2007, 43, .	4.2	12
140	Interpretation of macroscale variables in Darcy's law. Water Resources Research, 2007, 43, .	4.2	37
141	Monotonicity of control volume methods. Numerische Mathematik, 2007, 106, 255-288.	1.9	161
142	Inverse Scale Spaces for Nonlinear Regularization. Journal of Mathematical Imaging and Vision, 2007, 27, 41-50.	1.3	17
143	An improved analytical solution for interface upconing around a well. Water Resources Research, 2006, 42, .	4.2	48
144	Similarity solutions for fluid injection into confined aquifers. Journal of Fluid Mechanics, 2006, 561, 307.	3.4	230

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145	Non-uniqueness of evapotranspiration due to spatial heterogeneity of plant species. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2006, 462, 2359-2371.	2.1	5
146	Discretization on quadrilateral grids with improved monotonicity properties. Journal of Computational Physics, 2005, 203, 744-760.	3.8	68
147	Injection and Storage of CO2 in Deep Saline Aquifers: Analytical Solution for CO2 Plume Evolution During Injection. Transport in Porous Media, 2005, 58, 339-360.	2.6	483
148	Monotonicity conditions for control volume methods on uniform parallelogram grids in homogeneous media. Computational Geosciences, 2005, 9, 61-72.	2.4	68
149	Evaluation of the spread of acid-gas plumes injected in deep saline aquifers in western Canada as an analogue for CO2 injection into continental sedimentary basins. , 2005, , 479-487.		38
150	Semianalytical Solution for CO2 Leakage through an Abandoned Well. Environmental Science & Technology, 2005, 39, 602-611.	10.0	276
151	Analytical solutions for leakage rates through abandoned wells. Water Resources Research, 2004, 40, .	4.2	169