

Erik Hans Saenger

List of Publications by Year in descending order

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148
papers

4,347
citations

136940

32
h-index

110368

64
g-index

174
all docs

174
docs citations

174
times ranked

2375
citing authors

#	ARTICLE	IF	CITATIONS
1	Modeling the propagation of elastic waves using a modified finite-difference grid. <i>Wave Motion</i> , 2000, 31, 77-92.	2.0	536
2	Digital rock physics benchmarksâ€™Part I: Imaging and segmentation. <i>Computers and Geosciences</i> , 2013, 50, 25-32.	4.2	493
3	Digital rock physics benchmarksâ€™part II: Computing effective properties. <i>Computers and Geosciences</i> , 2013, 50, 33-43.	4.2	442
4	Finiteâ€difference modeling of viscoelastic and anisotropic wave propagation using the rotated staggered grid. <i>Geophysics</i> , 2004, 69, 583-591.	2.6	245
5	Accuracy of heterogeneous staggered-grid finite-difference modeling of Rayleigh waves. <i>Geophysics</i> , 2006, 71, T109-T115.	2.6	161
6	Digital rock physics: numerical prediction of pressure-dependent ultrasonic velocities using micro-CT imaging. <i>Geophysical Journal International</i> , 2012, 189, 1475-1482.	2.4	134
7	Effective velocities in fractured media: a numerical study using the rotated staggered finite-difference grid. <i>Geophysical Prospecting</i> , 2002, 50, 183-194.	1.9	133
8	Effective elastic properties of randomly fractured soils: 3D numerical experiments. <i>Geophysical Prospecting</i> , 2004, 52, 183-195.	1.9	108
9	Digital rock physics: Effect of fluid viscosity on effective elastic properties. <i>Journal of Applied Geophysics</i> , 2011, 74, 236-241.	2.1	98
10	Time reverse modeling of lowâ€frequency microtremors: Application to hydrocarbon reservoir localization. <i>Geophysical Research Letters</i> , 2008, 35, .	4.0	92
11	Synchrotron-based X-ray tomographic microscopy for rock physics investigations. <i>Geophysics</i> , 2013, 78, D53-D64.	2.6	88
12	A passive seismic survey over a gas field: Analysis of low-frequency anomalies. <i>Geophysics</i> , 2009, 74, O29-O40.	2.6	80
13	Lusi mud eruption triggered by geometric focusing of seismic waves. <i>Nature Geoscience</i> , 2013, 6, 642-646.	12.9	73
14	Numerical methods to determine effective elastic properties. <i>International Journal of Engineering Science</i> , 2008, 46, 598-605.	5.0	65
15	On the path to the digital rock physics of gas hydrate-bearing sediments â€ processing of in situ synchrotron-tomography data. <i>Solid Earth</i> , 2016, 7, 1243-1258.	2.8	56
16	Pore fluid effects on S-wave attenuation caused by wave-induced fluid flow. <i>Geophysics</i> , 2012, 77, L13-L23.	2.6	55
17	Laboratoryâ€based seismic attenuation in Fontainebleau sandstone: Evidence of squirt flow. <i>Journal of Geophysical Research: Solid Earth</i> , 2015, 120, 7526-7535.	3.4	54
18	Frequency-dependent seismic attenuation in shales: experimental results and theoretical analysis. <i>Geophysical Journal International</i> , 2014, 198, 504-515.	2.4	53

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19	An overview of laboratory apparatuses to measure seismic attenuation in reservoir rocks. <i>Geophysical Prospecting</i> , 2014, 62, 1211-1223.	1.9	53
20	Low-frequency microtremor anomalies at an oil and gas field in Voitsdorf, Austria. <i>Geophysical Prospecting</i> , 2009, 57, 393-411.	1.9	50
21	Comparison of finite difference and finite element methods for simulating two-dimensional scattering of elastic waves. <i>Physics of the Earth and Planetary Interiors</i> , 2008, 171, 112-121.	1.9	48
22	Analysis of high-resolution X-ray computed tomography images of Bentheim sandstone under elevated confining pressures. <i>Geophysical Prospecting</i> , 2016, 64, 848-859.	1.9	48
23	Application of time reverse modeling on ultrasonic non-destructive testing of concrete. <i>Applied Mathematical Modelling</i> , 2011, 35, 807-816.	4.2	46
24	Time reverse modeling of acoustic emissions in a reinforced concrete beam. <i>Ultrasonics</i> , 2016, 65, 96-104.	3.9	46
25	Scattering and diffraction by a single crack: an accuracy analysis of the rotated staggered grid. <i>Geophysical Journal International</i> , 2005, 162, 25-31.	2.4	43
26	Finite-difference modeling of wave propagation on microscale: A snapshot of the work in progress. <i>Geophysics</i> , 2007, 72, SM293-SM300.	2.6	43
27	Seismic effects of viscous Biot-coupling: Finite difference simulations on micro-scale. <i>Geophysical Research Letters</i> , 2005, 32, n/a-n/a.	4.0	42
28	Coal Cleat/Fracture Segmentation Using Convolutional Neural Networks. <i>Natural Resources Research</i> , 2020, 29, 1675-1685.	4.7	39
29	Effects of Parallel Crack Distributions on Effective Elastic Properties - a Numerical Study. <i>International Journal of Fracture</i> , 2003, 124, L171-L178.	2.2	36
30	Time reverse characterization of sources in heterogeneous media. <i>NDT and E International</i> , 2011, 44, 751-759.	3.7	36
31	Numerical considerations of fluid effects on wave propagation: Influence of the tortuosity. <i>Geophysical Research Letters</i> , 2004, 31, n/a-n/a.	4.0	35
32	Elastic wave propagation in a segmented X-ray computed tomography model of a concrete specimen. <i>Construction and Building Materials</i> , 2010, 24, 2393-2400.	7.2	35
33	Effective Elastic Properties of Fractured Rocks: Dynamic vs. Static Considerations. <i>International Journal of Fracture</i> , 2006, 139, 569-576.	2.2	33
34	Three-component ambient noise beamforming in the Parkfield area. <i>Geophysical Journal International</i> , 2018, 213, 1478-1491.	2.4	32
35	Seismic hazard precursory evolution: fractal and multifractal aspects. <i>Physics and Chemistry of the Earth</i> , 2004, 29, 367-378.	2.9	31
36	Time-lapse analysis of ambient surface wave anisotropy: A three-component array study above an underground gas storage. <i>Journal of Geophysical Research: Solid Earth</i> , 2013, 118, 5339-5351.	3.4	31

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37	Digital carbonate rock physics. <i>Solid Earth</i> , 2016, 7, 1185-1197.	2.8	30
38	Seismic attenuation in partially saturated rocks: Recent advances and future directions. <i>The Leading Edge</i> , 2014, 33, 640-646.	0.7	28
39	Defect mapping in pipes by ultrasonic wavefield cross-correlation: A synthetic verification. <i>Ultrasonics</i> , 2018, 90, 153-165.	3.9	27
40	Estimating 3D elastic moduli of rock from 2D thin-section images using differential effective medium theory. <i>Geophysics</i> , 2018, 83, MR211-MR219.	2.6	25
41	Digital rock physics and laboratory considerations on a high-porosity volcanic rock. <i>Scientific Reports</i> , 2020, 10, 5840.	3.3	23
42	Computing heterogeneous core sample velocity using Digital Rock Physics: A multiscale approach. <i>Computers and Geosciences</i> , 2020, 135, 104378.	4.2	21
43	Pore scale numerical modeling of elastic wave dispersion and attenuation in periodic systems of alternating solid and viscous fluid layers. <i>Journal of the Acoustical Society of America</i> , 2006, 120, 642-648.	1.1	20
44	A numerical study on reflection coefficients of fractured media. <i>Geophysics</i> , 2007, 72, D61-D67.	2.6	20
45	Rock compressibility from microcomputed tomography images: Controls on digital rock simulations. <i>Geophysics</i> , 2019, 84, WA127-WA139.	2.6	20
46	Fracture Unclogging: A Numerical Study of Seismically Induced Viscous Shear Stresses in Fluid-Saturated Fractured Rocks. <i>Journal of Geophysical Research: Solid Earth</i> , 2019, 124, 11705-11727.	3.4	19
47	Integrated numerical and laboratory rock physics applied to seismic characterization of reservoir rocks. <i>The Leading Edge</i> , 2011, 30, 1360-1367.	0.7	17
48	Crack localization in a double-punched concrete cuboid with time reverse modeling of acoustic emissions. <i>International Journal of Fracture</i> , 2011, 171, 1-10.	2.2	16
49	Integrated Stress Field Estimation and Implications for Enhanced Geothermal System Development in Acoculco, Mexico. <i>Geothermics</i> , 2021, 89, 101931.	3.4	16
50	Characterization of discontinuities in potential reservoir rocks for geothermal applications in the Rhine-Ruhr metropolitan area (Germany). <i>Solid Earth</i> , 2021, 12, 35-58.	2.8	15
51	Low-frequency anomalies in spectral ratios of single-station microtremor measurements: Observations across an oil and gas field in Austria. , 2007, , .		14
52	Numerical simulation of ambient seismic wavefield modification caused by pore-fluid effects in an oil reservoir. <i>Geophysics</i> , 2013, 78, T41-T52.	2.6	14
53	Regional earthquakes followed by delayed ground uplifts at Campi Flegrei Caldera, Italy: Arguments for a causal link. <i>Earth and Planetary Science Letters</i> , 2017, 474, 436-446.	4.4	13
54	Squirt flow due to interfacial water films in hydrate bearing sediments. <i>Solid Earth</i> , 2018, 9, 699-711.	2.8	13

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55	A hydrocarbon microtremor survey over a gas field: Identification of seismic attributes. , 2007, , .		12
56	Obtaining reliable source locations with time reverse imaging: limits to array design, velocity models and signal-to-noise ratios. <i>Solid Earth</i> , 2018, 9, 1487-1505.	2.8	11
57	Digital Rock Physics: A Geological Driven Workflow for the Segmentation of Anisotropic Ruhr Sandstone. <i>Frontiers in Earth Science</i> , 2021, 9, .	1.8	11
58	Spectral analysis of ambient ground-motionâ€”Noise reduction techniques and a methodology for mapping horizontal inhomogeneity. <i>Journal of Applied Geophysics</i> , 2011, 74, 100-113.	2.1	10
59	A statistical strategy for ambient seismic wavefield analysis: investigating correlations to a hydrocarbon reservoir. <i>Geophysical Journal International</i> , 2013, 192, 148-162.	2.4	10
60	Application of alternative digital rock physics methods in a real case study: a challenge between clean and cemented samples. <i>Geophysical Prospecting</i> , 2018, 66, 767-783.	1.9	10
61	Elastic-Electrical Rock-Physics Template for the Characterization of Tight-Oil Reservoir Rocks. <i>Lithosphere</i> , 2021, 2021, .	1.4	10
62	Attenuation of P-waves due to interlayer fluid flow in hydrate-bearing sediments. <i>Journal of Geophysics and Engineering</i> , 2007, 4, 394-403.	1.4	9
63	Leaky mode: A mechanism of horizontal seismic attenuation in a gas-hydrate-bearing sediment. <i>Geophysics</i> , 2007, 72, E159-E163.	2.6	9
64	Temperature-dependent poroelastic and viscoelastic effects on microscale-modelling of seismic reflections in heavy oil reservoirs. <i>Geophysical Journal International</i> , 2009, 176, 822-832.	2.4	9
65	Numerical support of laboratory experiments: Attenuation and velocity estimations. <i>Acta Geophysica</i> , 2014, 62, 1-11.	2.0	9
66	Time-reverse imaging with limited S-wave velocity model information. <i>Geophysics</i> , 2011, 76, MA33-MA40.	2.6	8
67	Digital rock physics: Defining the reservoir properties on drill cuttings. <i>Journal of Petroleum Science and Engineering</i> , 2022, 210, 110063.	4.2	8
68	Digital material laboratory: Wave propagation effects in open-cell aluminium foams. <i>International Journal of Engineering Science</i> , 2012, 58, 115-123.	5.0	7
69	Imaging the Deep Structures of Los Humeros Geothermal Field, Mexico, Using Three-Component Seismic Noise Beamforming. <i>Seismological Research Letters</i> , 2020, 91, 3269-3277.	1.9	7
70	Determination of the time-dependent moment tensor using time reverse imaging. <i>Geophysics</i> , 2021, 86, KS63-KS77.	2.6	7
71	Seismic wave attenuation for partially saturated sandstone as a function of confining pressure. , 2013, , .		7
72	Comparison of 2D and 3D time-reverse imagingâ€”A numerical case study. <i>Computers and Geosciences</i> , 2012, 46, 174-182.	4.2	6

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73	Numerical simulations of passing seismic waves at the Larderello-Travale Geothermal Field, Italy. <i>Geophysical Research Letters</i> , 2017, 44, 5418-5426.	4.0	6
74	Attenuation of Seismic Waves in Partially Saturated Berea Sandstone as a Function of Frequency and Confining Pressure. <i>Frontiers in Earth Science</i> , 2021, 9, .	1.8	6
75	Timeâ€reverse modeling of microtremors: A potential method for hydrocarbon reservoir localization. , 2007, , .		5
76	Comment on "Comparison of the non-interaction and differential schemes in predicting the effective elastic properties of fractured media" by V. Grechka. <i>International Journal of Fracture</i> , 2007, 146, 291-292.	2.2	5
77	Rayleigh and Love wave anisotropy in Southern California using seismic noise. <i>Geophysical Research Letters</i> , 2014, 41, 363-369.	4.0	5
78	Sensitivity of Ultrasonic Coda Wave Interferometry to Material Damageâ€Observations from a Virtual Concrete Lab. <i>Materials</i> , 2021, 14, 4033.	2.9	5
79	Numerical Simulation-Based Damage Identification in Concrete. <i>Modelling</i> , 2021, 2, 355-369.	1.4	5
80	Ultrasonic prediction of crack density using machine learning: A numerical investigation. <i>Geoscience Frontiers</i> , 2022, 13, 101277.	8.4	5
81	Influence of stress and strain loading conditions on elastic and sonic properties of digital rocks. , 2017, , .		5
82	Simulation of the diffraction by single cracks: An accuracy study. , 2002, , .		4
83	Reply to comment on "Lowâ€frequency microtremor anomalies at an oil and gas field in Voitsdorf, Austria" by Marcâ€AndrÃ© Lambert, Stefan M. Schmalholz, Erik H. Saenger and Brian Steiner, <i>Geophysical Prospecting</i> 57, 393â€411. <i>Geophysical Prospecting</i> , 2010, 58, 341-346.	1.9	4
84	Digital rock physics: Numerical vs. laboratory measurements. , 2011, , .		4
85	Guided ultrasonic wavefield cross-correlation with a curved array for high-resolution plate inspection. <i>Journal of Geophysics and Engineering</i> , 2020, 17, 451-462.	1.4	4
86	Sensitivity maps for time-reverse imaging: an accuracy study for the Los Humeros Geothermal Field (Mexico). <i>Geophysical Journal International</i> , 2020, 222, 231-246.	2.4	4
87	Validation suite for numerical solvers calculating effective thermal conductivity in porous media. <i>Journal of Applied Geophysics</i> , 2021, 189, 104323.	2.1	4
88	Single-Station Coda Wave Interferometry: A Feasibility Study Using Machine Learning. <i>Materials</i> , 2021, 14, 3451.	2.9	4
89	In Situ Stress State of the Ruhr Region (Germany) and Its Implications for Permeability Anisotropy. <i>Rock Mechanics and Rock Engineering</i> , 2021, 54, 6649-6663.	5.4	4
90	Computing wave velocity of rock sample using rock chips and cuttings. <i>Journal of Petroleum Science and Engineering</i> , 2022, 209, 109849.	4.2	4

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91	Microstructure of hydrate-bearing sediments and determination of P-wave velocities based on high-resolution synchrotron tomographic data. , 2015, , .		3
92	Reflection coefficients of fractured rocks: A numerical study. , 2004, , .		3
93	Comment on "A comparison of the dispersion relations for anisotropic elastodynamic finite-difference grids" (H. Bernth and C. Chapman, 2011, <scp>Geophysics</scp>, 76, no. 3, WA43-WA50). Geophysics, 2011, 76, X1-X1.	2.6	2
94	Digital carbonate rock physics. , 2014, , .		2
95	Forced oscillation measurements of seismic attenuation in fluid saturated sandstone. Acta Geophysica, 2017, 65, 165-172.	2.0	2
96	Time Reverse Modeling Versus Automatic Onset Detection: A Study on the Localization of Acoustic Emissions in Reinforced Concrete. RILEM Bookseries, 2013, , 45-50.	0.4	2
97	Conceptual model of hydrocarbon reservoir related microtremors. , 2009, , .		2
98	Comparison of 2D and 3D time reverse modeling for tremor source localization. , 2010, , .		2
99	K α spectroscopy as temperature diagnostic of dense KALIF plasmas. Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, 1998, 415, 594-598.	1.6	1
100	A numerical study of effective velocities in fractured media using the rotated staggered finite difference grid. , 2000, , .		1
101	3D finite-difference modeling of viscoelastic and anisotropic wave propagation using the rotated staggered grid. , 2002, , .		1
102	Poroeastic effect on the shear wave in the systems of alternating solid and viscous fluid layers: theory vs numerical modeling. , 2005, , .		1
103	Effective elastic properties of fractured rocks: Dynamic vs. static considerations. , 2006, , .		1
104	Low frequency measurements of seismic wave attenuation in Berea sandstone. , 2011, , .		1
105	Microscale Investigations of Highfrequency Wave Propagation Through Highly Porous Media. Proceedings in Applied Mathematics and Mechanics, 2012, 12, 555-556.	0.2	1
106	Synchrotron-based X-ray tomographic images and segmentation techniques to account for effects of grain contacts and micro-cracks on rock properties. , 2013, , .		1
107	Towards a Representative Rock Model from a Micro-CT Image. , 2014, , .		1
108	Computational determination of effective properties of rocks using 3D tomographic images. , 2009, , .		1

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109	On the Effect of Image Enhancement Techniques on Digital Rock Physics Results. , 2013, , .		1
110	Numerical determination of pressureâ€dependent effective thermal conductivity in Berea sandstone. Geophysical Prospecting, 0, , .	1.9	1
111	Simulation of effective elastic properties of 3D fractured medium. , 2002, , .		1
112	Time Reverse Characterization of Sources in 2D and 3D Heterogeneous Media. , 2010, , .		1
113	Numerical rock physics: The Gassmann equation. , 2003, , .		0
114	Fluid effects on wave propagation: A numerical study. , 2004, , .		0
115	Numerical Considerations of Fluid Effects on Wave Propagation. , 2005, , 385-394.		0
116	Leaky mode: A horizontal seismic attenuation mechanism in a gas hydrateâ€bearing sediment. , 2006, , .		0
117	Preliminary Model of Hydrocarbon Reservoir Related Microtremors and Recent Application in the Potiguar Basin. , 2009, , .		0
118	Viscosity scaling of wave attenuation mechanisms in porous rocks: Theory and numerical simulations. , 2011, , .		0
119	Analyzing passive seismic attributes: A statistical strategy. , 2011, , .		0
120	Further developments in measurement of lowâ€frequency seismic attenuation in laboratory. , 2011, , .		0
121	Synchrotron-based X-ray tomographic images: Raw data, segmentation techniques, and their influence on estimated rock properties. , 2013, , .		0
122	Digital Rock Physics: Poroelastic Signature of Permeability and Tortuosity. , 2013, , .		0
123	Numerical analysis of wave propagation in fluid-filled deformable tubes. Proceedings in Applied Mathematics and Mechanics, 2013, 13, 329-330.	0.2	0
124	Laboratory apparatuses for measuring seismic attenuation in fluid-saturated rocks. , 2013, , .		0
125	On effective elastic properties derived from CT-data. , 2015, , .		0
126	Digital Rock Physics: A case study of carbonate rocks. Proceedings in Applied Mathematics and Mechanics, 2016, 16, 399-400.	0.2	0

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127	Hydromechanical phenomena at the pore scale and their upscaling â€” Introduction. Geophysics, 2019, 84, WAI-WAii.	2.6	0
128	Low-Frequency Elastic Properties of a Polyminerale Carbonate: Laboratory Measurement and Digital Rock Physics. Frontiers in Earth Science, 2021, 9, .	1.8	0
129	Temperature and strain-rate dependence of brittle rock deformation: Experimental study on Mohr-Coulombâ€™s failure criterion and Byerleeâ€™s law for a low-porosity sandstone. , 2021, , .		0
130	Summary of Project 11172. , 2000, , 26-26.		0
131	A numerical study of effective velocities in fractured media: Intersecting and parallel cracks. , 2001, , .		0
132	Wave Propagation in Heterogeneous Media. Part 1: Effective Velocities in Fractured Media. , 2002, , 469-475.		0
133	Numerical Rock Physics: Fluid Effects on Wave Propagation. ASEG Extended Abstracts, 2004, 2004, 1-4.	0.1	0
134	Viscous fluid effects on wave propagation: a finiteâ€”difference modeling approach in combination with flow simulations. , 2005, , .		0
135	Numerical considerations of fluid effects on wave propagation. , 2005, , .		0
136	Transmission signatures of gashydrate bearing microâ€”structures: A numerical study. , 2006, , .		0
137	Slow compressional wave in porous media: Finite difference simulations on microâ€”scale. , 2006, , .		0
138	Interlayer flow as a reason for Pâ€”wave attenuation in multilayered gas hydrateâ€”bearing sediments. , 2006, , .		0
139	Using spectral attributes to detect seismic tremor sources â€” a synthetic study. , 2009, , .		0
140	Using Spectral Attributes to Detect Seismic Tremor Sources - A Synthetic Study. , 2010, , .		0
141	Integrated Numerical and Laboratory Rock Physics Applied to Seismic Characterization of Reservoir Rocks. , 2012, , .		0
142	Numerical support of laboratory experiments: Attenuation and velocity estimations. , 2012, , .		0
143	Numerical Estimation of Carbonate Properties Using a Digital Rock Physics Workflow. , 2014, , .		0
144	Seismic Attenuation in Fontainebleau Sandstone Saturated with High-viscosity Fluids. , 2015, , .		0

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145	Laboratory-based seismic attenuation in Fontainebleau sandstone: Evidence of squirt flow. , 2015, , .		0
146	Carbonate Rocks: A case Study to Evaluate Rock Properties Using Digital Rock Physics. , 2017, , .		0
147	Estimation of crack porosity in deep carbonate reservoirs based on attenuation rock physics templates. , 2020, , .		0
148	Damage identification in concrete using multiscale computational modeling and convolutional neural networks. Proceedings in Applied Mathematics and Mechanics, 2021, 21, .	0.2	0