

Kevin Zumbrun

List of Publications by Year in descending order

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141
papers

3,658
citations

156536
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53
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142
all docs

142
docs citations

142
times ranked

640
citing authors

#	ARTICLE	IF	CITATIONS
1	Large-amplitude modulation of periodic traveling waves. Discrete and Continuous Dynamical Systems - Series S, 2022, .	0.6	0
2	Instantaneous smoothing and exponential decay of solutions for a degenerate evolution equation with application to Boltzmann's equation. Kinetic and Related Models, 2022, 15, 729.	0.5	0
3	Transverse bifurcation of viscous slow MHD shocks. Physica D: Nonlinear Phenomena, 2021, 420, 132857.	1.3	1
4	Stability of strong detonation waves for Majda's model with general ignition functions. Quarterly of Applied Mathematics, 2021, 79, 357-365.	0.5	0
5	Stability of Hydraulic Shock Profiles. Archive for Rational Mechanics and Analysis, 2020, 235, 195-285.	1.1	7
6	A Sturm-Liouville theorem for quadratic operator pencils. Journal of Differential Equations, 2020, 268, 3848-3879.	1.1	2
7	Spectral stability of hydraulic shock profiles. Physica D: Nonlinear Phenomena, 2020, 405, 132360.	1.3	3
8	Spectral Stability of Inviscid Roll Waves. Communications in Mathematical Physics, 2019, 367, 265-316.	1.0	15
9	Convergence as period goes to infinity of spectra of periodic traveling waves toward essential spectra of a homoclinic limit. Journal Des Mathematiques Pures Et Appliquees, 2019, 132, 27-40.	0.8	2
10	Existence and stability of steady compressible Navier-Stokes solutions on a finite interval with noncharacteristic boundary conditions. Physica D: Nonlinear Phenomena, 2019, 394, 16-25.	1.3	2
11	Reverse norms and exponential decay for a class of degenerate evolution systems arising in kinetic theory. Journal of Mathematical Analysis and Applications, 2019, 475, 190-202.	0.5	0
12	Stable manifolds for a class of singular evolution equations and exponential decay of kinetic shocks. Kinetic and Related Models, 2019, 12, 1-36.	0.5	2
13	Center manifolds for a class of degenerate evolution equations and existence of small-amplitude kinetic shocks. Journal of Differential Equations, 2018, 264, 6752-6808.	1.1	2
14	Turing patterns in parabolic systems of conservation laws and numerically observed stability of periodic waves. Physica D: Nonlinear Phenomena, 2018, 367, 11-18.	1.3	2
15	Diffusive Stability of Spatially Periodic Solutions of the Brusselator Model. Communications in Mathematical Physics, 2018, 358, 1-43.	1.0	5
16	Euler Versus Lagrange: The Role of Coordinates in Practical Evans-Function Computations. SIAM Journal on Applied Dynamical Systems, 2018, 17, 1766-1785.	0.7	1
17	Invariant Manifolds for a Class of Degenerate Evolution Equations and Structure of Kinetic Shock Layers. Springer Proceedings in Mathematics and Statistics, 2018, , 691-714.	0.1	1
18	Note on the stability of viscous roll waves. Comptes Rendus - Mecanique, 2017, 345, 125-129.	2.1	6

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19	Multidimensional Stability of Large-Amplitude Navier–Stokes Shocks. Archive for Rational Mechanics and Analysis, 2017, 226, 923-973.	1.1	17
20	On Nonlinear Stabilization of Linearly Unstable Maps. Journal of Nonlinear Science, 2017, 27, 1641-1666.	1.0	4
21	Stability of Viscous St. Venant Roll Waves: From Onset to Infinite Froude Number Limit. Journal of Nonlinear Science, 2017, 27, 285-342.	1.0	13
22	Balanced flux formulations for multidimensional Evans-function computations for viscous shocks. Quarterly of Applied Mathematics, 2017, 76, 531-545.	0.5	4
23	Recent Results on Stability of Planar Detonations. Springer INdAM Series, 2017, , 273-308.	0.4	2
24	L^{∞} resolvent bounds for steady Boltzmann's Equation. Kinetic and Related Models, 2017, 10, 1255-1257.	0.5	3
25	Block-Diagonalization of ODEs in the Semiclassical Limit and C^ω versus C^∞ Stationary Phase. SIAM Journal on Mathematical Analysis, 2016, 48, 1773-1797.	0.9	2
26	Pointwise nonlinear stability of nonlocalized modulated periodic reaction–diffusion waves. Journal of Differential Equations, 2016, 261, 3941-3963.	1.1	4
27	Numerical proof of stability of viscous shock profiles. Mathematical Models and Methods in Applied Sciences, 2016, 26, 2451-2469.	1.7	9
28	Periodic-Coefficient Damping Estimates, and Stability of Large-Amplitude Roll Waves in Inclined Thin Film Flow. SIAM Journal on Mathematical Analysis, 2016, 48, 268-280.	0.9	9
29	High-Frequency Stability of Detonations and Turning Points at Infinity. SIAM Journal on Mathematical Analysis, 2015, 47, 1800-1878.	0.9	6
30	Convex Entropy, Hopf Bifurcation, and Viscous and Inviscid Shock Stability. Archive for Rational Mechanics and Analysis, 2015, 217, 309-372.	1.1	13
31	Stability of Viscous Weak Detonation Waves for Majda's Model. Journal of Dynamics and Differential Equations, 2015, 27, 237-260.	1.0	6
32	$O(1)$ Hopf bifurcation of viscous shock waves in a channel. Physica D: Nonlinear Phenomena, 2015, 308, 59-79.	1.3	7
33	Viscous Hyperstabilization of Detonation Waves in One Space Dimension. SIAM Journal on Applied Mathematics, 2015, 75, 885-906.	0.8	14
34	Spectral stability of periodic wave trains of the Korteweg-de Vries/Kuramoto-Sivashinsky equation in the Korteweg-de Vries limit. Transactions of the American Mathematical Society, 2014, 367, 2159-2212.	0.5	21
35	Entropy criteria and stability of extreme shocks: a remark on a paper of Leger and Vasseur. Proceedings of the American Mathematical Society, 2014, 143, 749-754.	0.4	6
36	Behavior of periodic solutions of viscous conservation laws under localized and nonlocalized perturbations. Inventiones Mathematicae, 2014, 197, 115-213.	1.3	50

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37	Nonlinear stability of source defects in the complex Ginzburg–Landau equation. <i>Nonlinearity</i> , 2014, 27, 739-786.	0.6	15
38	Nonlocalized modulation of periodic reaction diffusion waves: The Whitham equation. <i>Archive for Rational Mechanics and Analysis</i> , 2013, 207, 669-692.	1.1	33
39	Nonlocalized Modulation of Periodic Reaction Diffusion Waves: Nonlinear Stability. <i>Archive for Rational Mechanics and Analysis</i> , 2013, 207, 693-715.	1.1	28
40	Nonlinear modulational stability of periodic traveling-wave solutions of the generalized Kuramoto–Sivashinsky equation. <i>Physica D: Nonlinear Phenomena</i> , 2013, 258, 11-46.	1.3	43
41	Stability of viscous detonations for Majda’s model. <i>Physica D: Nonlinear Phenomena</i> , 2013, 259, 63-80.	1.3	7
42	Convergence of Hill’s Method for Nonselfadjoint Operators. <i>SIAM Journal on Numerical Analysis</i> , 2012, 50, 64-78.	1.1	18
43	Efficient numerical stability analysis of detonation waves in ZND. <i>Quarterly of Applied Mathematics</i> , 2012, 70, 685-703.	0.5	9
44	2-Modified Characteristic Fredholm Determinants, Hill’s Method, and the Periodic Evans Function of Gardner. <i>Zeitschrift Fur Analysis Und Ihre Anwendung</i> , 2012, 31, 463-472.	0.8	4
45	The Erpenbeck High Frequency Instability Theorem for Zeldovich–von Neumann–Döring Detonations. <i>Archive for Rational Mechanics and Analysis</i> , 2012, 204, 141-187.	1.1	8
46	Stability of periodic Kuramoto–Sivashinsky waves. <i>Applied Mathematics Letters</i> , 2012, 25, 824-829.	1.5	19
47	Towards nonlinear stability of sources via a modified Burgers equation. <i>Physica D: Nonlinear Phenomena</i> , 2012, 241, 382-392.	1.3	5
48	High-Frequency Asymptotics and One-Dimensional Stability of Zeldovich–von Neumann–Döring Detonations in the Small-Heat Release and High-Overdrive Limits. <i>Archive for Rational Mechanics and Analysis</i> , 2012, 203, 701-717.	1.1	11
49	Existence of quasilinear relaxation shock profiles in systems with characteristic velocities. <i>Annales De La Faculté Des Sciences De Toulouse</i> , 2012, 21, 1-23.	0.3	1
50	Nonlinear Stability of Viscous Roll Waves. <i>SIAM Journal on Mathematical Analysis</i> , 2011, 43, 577-611.	0.9	26
51	Nonlinear Stability of Periodic Traveling-Wave Solutions of Viscous Conservation Laws in Dimensions One and Two. <i>SIAM Journal on Applied Dynamical Systems</i> , 2011, 10, 189-211.	0.7	15
52	Instantaneous shock location and one-dimensional nonlinear stability of viscous shock waves. <i>Quarterly of Applied Mathematics</i> , 2011, 69, 177-202.	0.5	15
53	Existence and stability of steady states of a reaction convection diffusion equation modeling microtubule formation. <i>Journal of Mathematical Biology</i> , 2011, 63, 459-492.	0.8	16
54	Stability of Detonation Profiles in the ZND Limit. <i>Archive for Rational Mechanics and Analysis</i> , 2011, 200, 141-182.	1.1	22

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55	Existence and Stability of Viscoelastic Shock Profiles. Archive for Rational Mechanics and Analysis, 2011, 200, 491-532.	1.1	14
56	Transition to Longitudinal Instability of Detonation Waves is Generically Associated with Hopf Bifurcation to Time-Periodic Galloping Solutions. Communications in Mathematical Physics, 2011, 302, 1-51.	1.0	16
57	Nash-Moser iteration and singular perturbations. Annales De L'Institut Henri Poincare (C) Analyse Non Lineaire, 2011, 28, 499-527.	0.7	9
58	Nonlinear stability of spatially-periodic traveling-wave solutions of systems of reaction-diffusion equations. Annales De L'Institut Henri Poincare (C) Analyse Non Lineaire, 2011, 28, 471-483.	0.7	29
59	Metastability of solitary roll wave solutions of the St. Venant equations with viscosity. Physica D: Nonlinear Phenomena, 2011, 240, 1289-1310.	1.3	16
60	Stability and Dynamics of Viscous Shock Waves. The IMA Volumes in Mathematics and Its Applications, 2011,, 123-167.	0.5	10
61	The Resistive State in a Superconducting Wire: Bifurcation from the Normal State. Archive for Rational Mechanics and Analysis, 2010, 195, 117-158.	1.1	25
62	Stability and Asymptotic Behavior of Periodic Traveling Wave Solutions of Viscous Conservation Laws in Several Dimensions. Archive for Rational Mechanics and Analysis, 2010, 196, 1-20.	1.1	16
63	Nonlinear Stability of Time-Periodic Viscous Shocks. Archive for Rational Mechanics and Analysis, 2010, 196, 1011-1076.	1.1	23
64	Existence and Stability of Noncharacteristic Boundary Layers for the Compressible Navier-Stokes and Viscous MHD Equations. Archive for Rational Mechanics and Analysis, 2010, 197, 1-87.	1.1	27
65	Conditional Stability of Unstable Viscous Shock Waves in Compressible Gas Dynamics and MHD. Archive for Rational Mechanics and Analysis, 2010, 198, 1031-1056.	1.1	4
66	Stability of Isentropic Navier-Stokes Shocks in the High-Mach Number Limit. Communications in Mathematical Physics, 2010, 293, 1-36.	1.0	35
67	Long-Time Stability of Multi-Dimensional Noncharacteristic Viscous Boundary Layers. Communications in Mathematical Physics, 2010, 299, 1-44.	1.0	3
68	Stability of radiative shock profiles for hyperbolic-elliptic coupled systems. Physica D: Nonlinear Phenomena, 2010, 239, 428-453.	1.3	24
69	The refined inviscid stability condition and cellular instability of viscous shock waves. Physica D: Nonlinear Phenomena, 2010, 239, 1180-1187.	1.3	6
70	Nonlinear stability of periodic traveling wave solutions of systems of viscous conservation laws in the generic case. Journal of Differential Equations, 2010, 249, 1213-1240.	1.1	33
71	One-dimensional stability of parallel shock layers in isentropic magnetohydrodynamics. Journal of Differential Equations, 2010, 249, 2175-2213.	1.1	17
72	On the modulation equations and stability of periodic generalized Korteweg-de Vries waves via Bloch decompositions. Physica D: Nonlinear Phenomena, 2010, 239, 2057-2065.	1.3	21

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73	Existence and stability of viscous shock profiles for 2-D isentropic MHD with infinite electrical resistivity. <i>Acta Mathematica Scientia</i> , 2010, 30, 447-498.	0.5	12
74	A local greedy algorithm and higher-order extensions for global numerical continuation of analytically varying subspaces. <i>Quarterly of Applied Mathematics</i> , 2010, 68, 557-561.	0.5	14
75	Stability of noncharacteristic boundary layers in the standing-shock limit. <i>Transactions of the American Mathematical Society</i> , 2010, 362, 6397-6397.	0.5	5
76	Stability of Scalar Radiative Shock Profiles. <i>SIAM Journal on Mathematical Analysis</i> , 2010, 41, 2165-2206.	0.9	12
77	Transverse Instability of Periodic Traveling Waves in the Generalized Kadomtsev-Petviashvili Equation. <i>SIAM Journal on Mathematical Analysis</i> , 2010, 42, 2681-2702.	0.9	25
78	Nonlinear Stability of Semidiscrete Shocks for Two-Sided Schemes. <i>SIAM Journal on Mathematical Analysis</i> , 2010, 42, 857-903.	0.9	13
79	ASYMPTOTIC BEHAVIOR OF MULTIDIMENSIONAL SCALAR RELAXATION SHOCKS. <i>Journal of Hyperbolic Differential Equations</i> , 2009, 06, 663-708.	0.3	6
80	Spectral Stability of Weak Relaxation Shock Profiles. <i>Communications in Partial Differential Equations</i> , 2009, 34, 119-136.	1.0	11
81	Spectral Stability of Noncharacteristic Isentropic Navier-Stokes Boundary Layers. <i>Archive for Rational Mechanics and Analysis</i> , 2009, 192, 537-587.	1.1	14
82	Spectral Stability of Ideal-Gas Shock Layers. <i>Archive for Rational Mechanics and Analysis</i> , 2009, 194, 1029-1079.	1.1	38
83	Stability of undercompressive viscous shock profiles of hyperbolic-parabolic systems. <i>Journal of Differential Equations</i> , 2009, 246, 1539-1567.	1.1	19
84	Conditional stability of unstable viscous shocks. <i>Journal of Differential Equations</i> , 2009, 247, 648-671.	1.1	10
85	Existence of semilinear relaxation shocks. <i>Journal Des Mathematiques Pures Et Appliquees</i> , 2009, 92, 209-231.	0.8	7
86	Long-time stability of large-amplitude noncharacteristic boundary layers for hyperbolic-parabolic systems. <i>Journal Des Mathematiques Pures Et Appliquees</i> , 2009, 92, 547-598.	0.8	13
87	Pointwise Green Function Bounds and Long-Time Stability of Large-Amplitude Noncharacteristic Boundary Layers. <i>SIAM Journal on Mathematical Analysis</i> , 2009, 40, 2328-2350.	0.9	7
88	Hopf Bifurcation of Viscous Shock Waves in Compressible Gas Dynamics and MHD. <i>Archive for Rational Mechanics and Analysis</i> , 2008, 190, 107-140.	1.1	27
89	Stability of Viscous Shocks in Isentropic Gas Dynamics. <i>Communications in Mathematical Physics</i> , 2008, 281, 231-249.	1.0	33
90	Galloping instability of viscous shock waves. <i>Physica D: Nonlinear Phenomena</i> , 2008, 237, 1553-1601.	1.3	28

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91	Derivatives of (modified) Fredholm determinants and stability of standing and traveling waves. Journal Des Mathematiques Pures Et Appliquees, 2008, 90, 160-200.	0.8	26
92	Viscous boundary value problems for symmetric systems with variable multiplicities. Journal of Differential Equations, 2008, 244, 309-387.	1.1	14
93	Stability of isentropic Navier–Stokes shocks. Applied Mathematics Letters, 2008, 21, 742-747.	1.5	8
94	Transition to Instability of Planar Viscous Shock Fronts: the Refined Stability Condition. Zeitschrift Fur Analysis Und Ihre Anwendung, 2008, 27, 381-406.	0.8	3
95	A Sharp Stability Criterion for Soliton-Type Propagating Phase Boundaries in Korteweg's Model. Zeitschrift Fur Analysis Und Ihre Anwendung, 2008, 27, 11-30.	0.8	8
96	Nonclassical multidimensional viscous and inviscid shocks. Duke Mathematical Journal, 2008, 142, .	0.8	4
97	Uniform Stability Estimates for Constant-Coefficient Symmetric Hyperbolic Boundary Value Problems. Communications in Partial Differential Equations, 2007, 32, 579-590.	1.0	5
98	SPECTRAL STABILITY CONDITIONS FOR SHOCK WAVE PATTERNS. Journal of Hyperbolic Differential Equations, 2007, 04, 181-196.	0.3	0
99	Pointwise Green function bounds and stability of combustion waves. Journal of Differential Equations, 2007, 233, 654-698.	1.1	22
100	Planar Stability Criteria for Viscous Shock Waves of Systems with Real Viscosity. , 2007, , 229-326.		14
101	Low-Frequency Stability Analysis of Periodic Traveling-Wave Solutions of Viscous Conservation Laws in Several Dimensions. Zeitschrift Fur Analysis Und Ihre Anwendung, 2006, 25, 1-21.	0.8	12
102	SHARP POINTWISE BOUNDS FOR PERTURBED VISCOUS SHOCK WAVES. Journal of Hyperbolic Differential Equations, 2006, 03, 297-373.	0.3	16
103	Navier–Stokes regularization of multidimensional Euler shocks. Annales Scientifiques De L'Ecole Normale Superieure, 2006, 39, 75-175.	0.2	44
104	An efficient shooting algorithm for Evans function calculations in large systems. Physica D: Nonlinear Phenomena, 2006, 220, 116-126.	1.3	71
105	Stability of undercompressive shock profiles. Journal of Differential Equations, 2006, 225, 308-360.	1.1	40
106	Efficient Computation of Analytic Bases in Evans Function Analysis of Large Systems. Numerische Mathematik, 2006, 103, 631-642.	0.9	39
107	STABILITY OF DETONATION WAVES. , 2005, , .		1
108	Stability of Large-Amplitude Shock Waves of Compressible Navier–Stokes Equations. Handbook of Mathematical Fluid Dynamics, 2005, 3, 311-533.	0.1	44

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109	Hyperbolic boundary value problems for symmetric systems with variable multiplicities. Journal of Differential Equations, 2005, 211, 61-134.	1.1	74
110	Existence and Stability of Multidimensional Shock Fronts in the Vanishing Viscosity Limit. Archive for Rational Mechanics and Analysis, 2005, 175, 151-244.	1.1	69
111	Stability of Large-Amplitude Shock Profiles of General Relaxation Systems. SIAM Journal on Mathematical Analysis, 2005, 37, 889-913.	0.9	35
112	Large viscous boundary layers for noncharacteristic nonlinear hyperbolic problems. Memoirs of the American Mathematical Society, 2005, 175, 0-0.	0.5	52
113	Relative Poincaré-Hopf bifurcation and Galloping Instability of Traveling Waves. Methods and Applications of Analysis, 2005, 12, 349-380.	0.1	24
114	Stability of Large-Amplitude Viscous Shock Profiles of Hyperbolic-Parabolic Systems. Archive for Rational Mechanics and Analysis, 2004, 172, 93-131.	1.1	79
115	One-Dimensional Stability of Viscous Strong Detonation Waves. Archive for Rational Mechanics and Analysis, 2004, 173, 213-277.	1.1	32
116	Multidimensional viscous shocks II: The small viscosity limit. Communications on Pure and Applied Mathematics, 2004, 57, 141-218.	1.2	29
117	A stability index for detonation waves in Majda's model for reacting flow. Physica D: Nonlinear Phenomena, 2004, 194, 1-29.	1.3	36
118	Multidimensional viscous shocks I: Degenerate symmetrizers and long time stability. Journal of the American Mathematical Society, 2004, 18, 61-120.	1.9	49
119	Pointwise Green Function Bounds for Shock Profiles of Systems with Real Viscosity. Archive for Rational Mechanics and Analysis, 2003, 169, 177-263.	1.1	88
120	Pointwise Green's function bounds and stability of relaxation shocks. Indiana University Mathematics Journal, 2002, 51, 773-904.	0.4	68
121	Pointwise Green's Function Bounds for Multidimensional Scalar Viscous Shock Fronts. Journal of Differential Equations, 2002, 183, 368-408.	1.1	24
122	Errata to: 'Pointwise semigroup methods and stability of viscous shock waves'. Indiana University Mathematics Journal, 2002, 51, 1017-1022.	0.4	21
123	Analytically varying eigenvectors and the stability of viscous shock waves. Matematica Contemporanea, 2002, 22, .	0.0	18
124	Multidimensional Stability of Planar Viscous Shock Waves. , 2001, , 307-516.		72
125	Alternate Evans Functions and Viscous Shock Waves. SIAM Journal on Mathematical Analysis, 2001, 32, 929-962.	0.9	55
126	Boundary Layer Stability in Real Vanishing Viscosity Limit. Communications in Mathematical Physics, 2001, 221, 267-292.	1.0	61

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127	Stability of compressive and undercompressive thin film travelling waves. European Journal of Applied Mathematics, 2001, 12, 253-291.	1.4	53
128	Asymptotic behavior of multidimensional scalar viscous shock fronts. Indiana University Mathematics Journal, 2000, 49, 427-474.	0.4	48
129	Pointwise Estimates and Stability for Dispersive-Diffusive Shock Waves. Archive for Rational Mechanics and Analysis, 2000, 155, 85-169.	1.1	32
130	Dynamical Stability of Phase Transitions in the ϕ -System with Viscosity-Capillarity. SIAM Journal on Applied Mathematics, 2000, 60, 1913-1924.	0.8	36
131	Existence of Relaxation Shock Profiles for Hyperbolic Conservation Laws. SIAM Journal on Applied Mathematics, 2000, 60, 1565-1575.	0.8	50
132	Refined wave-tracking and nonlinear stability of viscous lax shocks. Methods and Applications of Analysis, 2000, 7, 747-768.	0.1	32
133	The gap lemma and geometric criteria for instability of viscous shock profiles. Communications on Pure and Applied Mathematics, 1998, 51, 797-855.	1.2	242
134	Connectivity of Phase Boundaries in Strictly Convex Domains. Archive for Rational Mechanics and Analysis, 1998, 141, 375-400.	1.1	100
135	Pointwise semigroup methods and stability of viscous shock waves. Indiana University Mathematics Journal, 1998, 47, 741-872.	0.4	224
136	Nonuniqueness of solutions of Riemann problems. Zeitschrift Fur Angewandte Mathematik Und Physik, 1996, 47, 977-998.	0.7	45
137	Multi-dimensional diffusion waves for the Navier-Stokes equations of compressible flow. Indiana University Mathematics Journal, 1995, 44, 603-676.	0.4	252
138	Nonlinear stability of an undercompressive shock for complex Burgers equation. Communications in Mathematical Physics, 1995, 168, 163-186.	1.0	53
139	On nonlinear stability of general undercompressive viscous shock waves. Communications in Mathematical Physics, 1995, 174, 319-345.	1.0	54
140	Scattering behavior of transitional shock waves. Matematica Contemporanea, 1992, 3, .	0.0	6
141	Whitham averaged equations and modulational stability of periodic traveling waves of a hyperbolic-parabolic balance law. Journal of Differential Equations Aux Conditions Partielles, 0, , 1-24.	0.2	9