

Publications of Zhengfang Zhou

A. Papers

- The Existence of Periodic Solutions of Nonlinear Wave Equations, *Comm. Partial Differential Equations* **12 (8)**(1987), 829-882.
- The Wave Operator on S^n : Estimates and Applications, *J. Funct. Anal.* **80 (2)** (1988), 332-348.
- The Global Goursat Problem on $R \times S^1$, *J. Funct. Anal.* **83 (2)**(1989), 364-382 (with J. C. Baez).
- Analyticity of Scattering for the ϕ^4 Theory, *Comm. Math. Phys.* **124 (1)**(1989), 9-21 (with J. C. Baez).
- The Global Goursat Problem and Scattering for Nonlinear Wave Equations, *J. Funct. Anal.* **93 (2)**(1990), 239-269 (with J. C. Baez and I. E. Segal).
- Scattering and Complete Integrability in the Massive ϕ^4 Theory, *J. Funct. Anal.* **94 (2)**(1990), 397-414 (with J. C. Baez).
- The Contractivity of the Free Hamiltonian Semigroup in the L_p Space of Entire Functions, *J. Funct. Anal.* **96 (2)**(1991), 407-425.
- The Nature of the Redshift and Directly Observed Quasar Statistics, *Naturwissenschaften* **78**(1991), 289-296 (with I. E. Segal, J. F. Nicoll, and P. Wu).
- Singular Operators on Boson fields as Forms on Spaces of Entire Functions on Hilbert Space, *J. Funct. Anal.* **100 (1)**(1991), 36-58 (with J. Pedersen and I. E. Segal).
- On Quantum Fields Satisfying a Given Wave Equation, *J. Funct. Anal.* **106 (2)**(1992), 439-453.
- Renormalized Oscillator Hamiltonians, *Adv. Math.* **92 (1)**(1992), 106-127 (with J. Baez).
- Massless ϕ_d^q Quantum Field Theories and the Nontriviality of ϕ_4^4 , *Nuclear Phys. B* **376 (1)**(1992), 129-142 (with J. Pedersen and I. E. Segal).
- Sobolev Estimates for the Wave Operator on Compact Manifolds, *Comm. Partial Differential Equations* **17 (11-12)**(1992), 1867-1887 (with C. Sogge and D. Jerison).
- Convergence of Massive Nonlinear Scalar Quantum Field Theory in the Einstein Universe, *Ann. Physics* **218 (2)**(1992), 279-292 (with I. E. Segal).
- Statistically Efficient Testing of the Hubble and Lundmark Laws on IRAS Galaxy Samples, *The Astrophysical Journal* **411**(1993), 465-484 (with I. E. Segal, J. F. Nicoll, and P. Wu).
- Convergence of Quantum Electrodynamics in a Curved Modification of Minkowski Space, *Proc. Natl. Acad. Sci. U.S.A.* **91**(1994), 962-963 (with I. E. Segal).
- Nonlinear Quantum Fields in ≥ 4 Dimensions and Cohomology of Infinite-dimensional Heisenberg Group, *Trans. Amer. Math. Soc.* **345 (1)**(1994), 73-95 (with I. E. Segal and J. Pedersen).
- Convergence of Quantum Electrodynamics in a Curved Deformation of Minkowski Space, *Ann. Phys.* **232 (1)** (1994), 61-87 (with I. E. Segal).
- Maxwell's Equations in the Einstein Universe and the Chronometric Cosmology, *Astrophysical Journal Supplement Series* **100** (1995), 307-324 (with I. E. Segal).

- Chronometric Particle Theory I. An Alternative to the Higgs Mechanism, submitted for publication (with D. A. Vogan and I. E. Segal).
- Symmetric Periodic Solutions of Semilinear Wave Equations on S^3 , *Comm. Partial Differential Equations* **21**(1996), no. 9-10, 1521-1550 (with X. Zhao).
- Inverse Diffraction by a Doubly Periodic Structure, *C. R. Acad. Sci. Paris, Ser. I*, **324 (6)** (1997) 627-632 (with G. Bao).
- Decay Estimates for Porous Medium Systems, submitted for publication (with Hongjun Yuan).
- A theorem on Improving Regularity of Minimizing Sequences by Reverse Hölder Inequalities, *Michigan Math. J.* **44** (1997), no. 3, 543-553 (with B. Yan).
- Stability of Weakly Almost Conformal Mappings, *Proc. Amer. Math. Soc.*, **126** (1998), no. 2, 481-489 (with B. Yan).
- An Inverse Problem for Scattering by a Doubly Symmetric Periodic Structure, *Trans. Amer. Math. Soc.*, **350 (10)** (1998), 4089-4103 (with G. Bao).
- Conformal Extension of Massive Wave Functions, *Journal of Functional Analysis*, **155**(1998), 550-570 (with I. E. Segal).
- Spinor Currents as Vector Particles, *Journal of Functional Analysis*, **156** (1998), 252-262 (with I. Segal, D. Vogan).
- Global Existence of Solutions to Nonlinear Wave Equations, *Communications in Partial Differential Equations*, **24** (11 & 12) (1999), 2297-2331 (with E. Belchev and M. Kepka).
- L^p Mean Coercivity, Regularity and Relaxation in the Calculus of Variations, *Nonlinear Analysis*, **46** (6) (2001), 160-177 (with B. Yan).
- Modeling of Nonlinear Optical Second Harmonic Generation in Periodic Structures, *Progress in Analysis I & II* (Berlin 2001), 1097-1105, World Sci. Publishing, River Edge, NJ (with G. Bao).
- Blow-up of Solution to Semilinear Wave Equations, *Journal of Functional Analysis*, **190** (1) (2002), 233-254 (with E. Belchev and M. Kepka).
- Exact Solution for Nonlinear Thermal Diffusion and its Use for Verification, *J. of Thermophysics and Heat Transfer*, **16**(3) (2002), 366-372 (with J. Beck, R. McMasters, C. Somerton, and Kevin Dowding).
- A Global Existence Theorem for Semilinear Wave Equations in Five Space Dimension *Journal of Math. Res. Exposition*, **22** (3) (2002), 351-367 (with H. Jiao).
- An Elementary Proof of the Blow-up for Semilinear Wave Equations in High Space Dimensions, *Journal of Differential Equations*, **189**(2) (2003), 355-365 (with H. Jiao).
- L^p Estimates for Maxwell Equations with source term, *C. R. Math. Acad. Sci Paris*, **337**(5) (2003), 365-370 (with A. Minut and G. Bao).
- No local Existence of L^1 Solutions of a Nonlinear Heat Equation, *Comm. Partial Differential Equations* **28** (11-12) (2003), 1807-1831 (with C. Celik).
- Maxwell's Equations in Nonlinear Biperiodic Structures, *Mathematical and Numerical Aspects of Wave Propagation — Waves 2003*, 406-411, Springer, Berlin, 2003 (with A. Minut and G. Bao).
- Multiplicity and Symmetry Breaking for Positive Radial Solutions of Semilinear Elliptic Equations Modelling MEMS on Annular Domains, *Electron. J. Diff. Eqns.* **146** (2005), 1-14 (with P. Feng).

- Global Existence of Solutions to Nonlinear Wave Equations by Weighted Strichartz Inequalities, submitted for publication (with N. Alpay).
- Finite Traveling Wave Solutions in a Degenerate Cross-Diffusion Model for Bacterial Colony, *Communications on Pure and Applied Analysis* **6**(4) (2007), 1145-1165 (with P. Feng).
- L^p Estimates for Maxwell Equations and its Applications, *Comm. Partial Differential Equations* **32** (7-9) (2007), 1449-1471 (with A. Minute and G. Bao).
- An Acoustic Intensity-based Method for Reconstruction of Radiated Fields, *J. Acoust. Soc. Am.* **123**(4) (2008), 1-10 (with C. Yu and M. Zhuang).
- L^p Estimates of time-harmonic Maxwell's Equations in a Bounded Domain, *J. Differential Equations* **245** (12) (2008), 3674-3686 (with G. Bao and Y. Li).
- Orbital Stability of Standing Waves for Semilinear Wave Equations with Indefinite Energy, *J. Math. Anal. Appl.* **344** (2) (2008), 981-998 (with B. Yan and X. Zhao).
- Hamiltonian-stationary Lagrangian surfaces of constant curvature ε in complex space form $\tilde{M}^2(4\varepsilon)$, *Nonlinear Analysis* **71** (7-8) (2009), 2640-2659 (with B. Y. Chen and O. J. Garay).
- Acoustic Intensity-Based Method for Sound Radiations in a Uniform Flow, *J. Acoust. Soc. Am.* , **126** (5) (2009), 2198-2205 (with C. Yu and M. Zhuang).
- Finite Blowup of a Variational Nonlinear Wave Equation, submitted for publication (with T. Park).
- Constructing Tight Fusion Frames, *Applied and Computational Harmonic Analysis*, **30**(2011) 175-187 (with P. Casazza, M. Fickus, D. Mixon and Y. Wang).
- Toeplitz Operators in $l^\infty(Z)$ and Their Applications to Empirical Mode Decompositions, preprint (with Y. Wang).
- Stability of Scattering of Electromagnetic Waves from Cavities, submitted for publication (with G. Bao and K. Yun).
- Phase Aliasing Correction For Robust Blind Source Separation Using DUET, submitted for publication (with Y. Wang and O. Yilmaz)
- 3D Acoustic Intensity-Based Inverse Method and Its CAA Application, submitted for publication (with Y. Chao, M. Zhuang, X. Li and F. Thiele).

B. Book

- Introduction to Algebraic and Constructive Quantum Field Theory, Princeton University Press, 1992 (with J. Baez and I. E. Segal).