

# CURRICULUM VITAE

**Name:** Chong Li

**Academic Degree:** Ph.D. (1995)

**Academic Rank:** Professor (1995), Qualified Supervisor of Ph.D students (2000)

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**Present Position**

- Professor and Qualified Supervisor of Ph.D students, Department of Mathematics, Zhejiang University.

**Ph D students supervised**

- Xianfa Luo: September 2002-July 2005, graduated;
- Jinhua Wang: March 2004-February 2007, graduated;
- Lihui Peng: September 2004-July 2007, graduated;
- Weiping Shen: March 2006-July 2009, graduated;
- Wenling Gao: March 2005-February 2008;
- Nuchun Hu: September 2005-July 2008;
- Lei Lin: September 2005-July 2010;
- Donghui Fang: September 2007-July 2010;
- Jifeng Bao: September 2008-July 2011.
- Mohammed Harunor Rashid: September 2009-July 2012.

**Previous Positions**

- August 1985 – October 1991: Lecturer, Department of Mathematics, Hangzhou Institute of Commerce
- November 1991 – December 1995: Associate Professor, Department of Mathematics, Hangzhou Institute of Commerce

- January 1996 – February 1998: Professor, Department of Applied Mathematics, Zhejiang University
- March 1996 – September 2002: Professor, Department of Applied Mathematics, Southeast University
- October 2002– Present: Professor, Department of Mathematics, Zhejiang University.

### **Education**

- September 1978 - July 1982: B.Sc., Department of Mathematics, Nanjing Normal University, Nanjing, China
- September 1982 - August 1985: M.Sc., Department of Mathematics, Zhejiang Normal University, Jinhua, China
- September 1992 - July 1995: Ph.D., Department of Mathematics, Hangzhou University, Hangzhou, China

### **Research Interests**

- Numerical functional analysis
- Nonsmooth analysis and nonlinear optimization
- Nonlinear approximations
- Numerical analysis

### **Visiting Positions**

- Institute of Mathematics, Chinese Academy of Sciences, China: March 1989 - August 1989; July 1993 - September 1993; July 1999 - September 1999;
- University of Durban-Westville, South Africa: March 2001-December 2001;
- The Chinese University of Hong Kong: January 2000-February 2002, July 2002-August 2002, January 2003-February 2003, July 2003-August 2003, January 2004-February 2004, July 2004-August 2004, January 2005, July 2005-August 2005, January 2006, July 2006-August 2006, January 2007, July-August 2007, November 2007, November 2008-December 2008, June 2009-July 2009;
- University of Sevilla, Spain: June 2003, June 2004; March 2005; March 2007; January 2008- October 2008;
- University of L'quila, Italy: February 2005;
- University of Paul Sabatier: February 2007;
- National Sun Yat-Sen University: June 2007, January 2009, August 2009, November 2009.

## Research Projects

- Nonexpansive, monotone accretive and cyclic operators: Applications, supported by DGPE of Spain, 2009-2012. (Grant No: MTM2009-10696-C02-01)
- Study on Problems of Numerical Linear and Nonlinear Algebra in Scientific Computing, supported by the National Natural Science Foundation of China, 2008-2011. (Grant No: 10731060)
- Strong CHIP and Best Approximation in Banach Spaces, supported by the National Natural Science Foundation of China, 2007-2009. (Grant No: 10671175)
- Approximation and Computation for Some Nonlinear Problems in Banach Spaces and Banach Manifolds, supported by Program for New Century Excellent Talents in University, 2005-2007. (Grant No: NCET-04-0532)
- Nonlinearly Constrained Approximation and Optimization Problems, supported by the National Natural Science Foundation of China, 2003-2005. (Grant No: 10271025)
- Nonlinear Analysis and Approximation, supported by NRF Research Fellowship of South Africa, 2001-2001.
- Well Posedness Of Nonlinear Approximation and Optimizations, supported by the National Natural Science Foundation of China, 2000-2002. (Grant No: 19971013)
- Nonlinear Approximation and Optimizations, supported by the Jiangsu Provincial Natural Science Foundation, 1999-2001. (Grant No: BK99001)
- Well Posedness Of Approximation and Optimization Problems, supported by the Zhejiang Provincial Natural Science Foundation, 1997-1999. (Grant No: 196010)
- On Problems of Nonlinear Approximation, supported by the National Postdoctoral Science Foundation of China, 1996-1997.
- Nonlinear Approximation in Banach Spaces, supported by the National Natural Science Foundation of China, 1995-1997. (Grant No: 19471021)
- Nonlinear Approximation Theory, supported by the National Natural Science Foundation of China, 1991-1993. (Grant No: 19001014)

# List of Publications

## I. Book

- Nonlinear Approximation Theory in Banach Spaces, Science Press, Chinese Academy of Sciences, Beijing, 1997; Second edition, 1998. (with S. Y. Xu and W. S. Yang).

## II. Papers to appear

1. Anisotropic best  $\tau_c$ -approximation in normed spaces, **Optim.**, (with X. F. Luo and J. C. Yao).
2. Monotone and accretive vector fields on Riemannian manifolds, **J. Optim. Theory Appl.**, (with J. H. Wang, G. Lopez and V. Martin-Marquez).
3. Kantorovich's theorems of Newton's method for mappings and optimization problems on Lie groups, **IMA Numer. Anal.**, (with J. H. Wang).

## III. Papers published

1. Constraint qualifications for optimality conditions and total Lagrange dualities in convex infinite programming, *Nonlinear Anal.*, 73, 2010, pp.1143-1159. (with D. H. Fang and K. F. Ng).
2. Nearest and farthest points in spaces of curvature bounded below, **J. Approx. Theory**, 162, 2010, pp.1364-1380. (with R. Espínola and G. Lopez).
3. Convergence behavior of Gauss-Newton's method and extensions of the Smale point estimate theory, **J. Complexity**, 26, 2010, pp.268-295.(with N. C. Hu and J. H. Wang).
4. Subdifferentials of perturbed distance functions in Banach spaces, **J Global Optim.**, 46, 2010, pp. 489-501. (with J. H. Wang and H. K. Xu).
5. Iterative algorithms for nonexpansive mapping in Hadamard manifolds, **Taiwanese J. Math.**, 14(2), 2010,pp.541-559. (with G. Lopez and V. Martin-Marquez).
6. Bregman distance, approximate compactness and convexity of Chebyshev sets in Banach, **J. Approx. Theory**, 162, 2010, pp.1128-1149. (with W. Song and J. C. Yao).
7. Well-posedness of the perturbed optimization in Banach space: the maximum problems, **Taiwanese J. Math.**, 14(4), 2010,pp.1351-1369. (with L. H. Peng and J. C. Yao).
8. Smale's  $\alpha$ -theory for inexact Newton methods under the  $\gamma$ -condition, **J. Math. Anal. Appl.**, 369, 2010,pp.29-42. (with W. P. Shen).
9. Bregman distances and Klee sets in Banach spaces, **Taiwanese J. math.**, 13(6)(2009), 1847-1865. (with D. H. Fang and W. Song).

10. Constraint qualifications for extended Farkas's lemmas and Lagrangian dualities in convex infinite programming, **SIAM J. Optim.**, 20(3)(2009), 1311C1332. (with D. H. Fang and K. F. Ng).
11. Existence of solutions for variational inequalities on Riemannian manifolds, **Nonlinear Anal.**, 71(11)(2009), 5695-5706. (with S. L. Li, Y. C. Liou and J. C. Yao).
12. Stable and total Fenchel duality for convex optimization problems in locally convex spaces, **SIAM, J. Optim.**, 20(2)(2009), 1032-1051. (with D. H. Fang, G. Lopez, and M. A. Lopez).
13. Monotone vector fields and the proximal point algorithm on Hadamard manifolds, **J. London Math. Soc.**, 79(2)(2009), 663-683. (with G. Lopez and V. Martin-Marquez).
14. Extended Newton's method for mappings on Riemannian manifolds with values in a cone, **Taiwanese J. Math.**, 13(2009), 633-656. (with J. H. Wang and S. C. Huang).
15. Convergence of the family of Euler-Halley type methods on Riemannian manifolds under the  $\gamma$ -condition, **Taiwanese J. Math.**, 13(2009), 585-606. (with J. H. Wang).
16. Kantorovich-type convergence criterion for inexact Newton methods, **Applied Numer. Math.**, 59(2009), 1599-1611. (with W. P. Shen).
17. Smales point estimate theory for Newtons method on Lie groups, **J. Complexity**, 25(2009), 128-151. (with J. H. Wang and J. P. Dedieu).
18. Generalized derivatives of distance functions and the existence of nearest points, **Nonlinear Anal.** , 70(2009), 2575-2581. (with J. S. He).
19. Nonlinear simultaneous approximation in complete lattice Banach spaces, **Taiwanese J. Math.**, 12(2008), 2373-2385. (with D. F. Fang and X. F. Luo).
20. Well-posedness of a class of perturbed optimization problems in Banach spaces, **J. Math. Anal. Appl.**, 346(2008), 384-394. (with L. H. Peng and J. C. Yao).
21. Convergence criterion of Newtons method for singular systems with constant rank derivatives, **J. Math. Anal. Appl.**, 345 (2008), 689-701. (with X. B. Xu).
22. Convergence criterion of inexact methods for operators with Holder continuous first derivatives, **Taiwanese J. Math.**, 12(2008), 1865-1882. (with W. P. Shen).
23. Local convergence of inexact methods under the Hölder condition, **J. Comp. Appl. Math.**, 222(2008), 544-560. (with W. P. Shen).
24. Best simultaneous approximation to totally bounded sequences in Banach spaces, **Act. Math. Sinica, New series**, 24(2008), 1541-1554. (with X. F. Luo and G. Lopez).
25. Newton's method for sections on Riemannian manifolds: generalized covariant  $\alpha$ -theory, **J. Complexity**, 24(2008), 423-451. (with J. H. Wang).

26. Constraint qualifications for convex inequality systems with applications in constrained optimization, **SIAM J. Optim.**, 19(2008), 163-187.(with K. F. Ng and T. K. Pong).
27. Nonlinear weighted best simultaneous approximation in Banach spaces, **J. Math. Anal. Appl.**, 337(2008), 1100-1118.(with X. F. Luo and G. Lopez).
28. Kantorovichs type theorems for systems of equations with constant rank derivatives, **J. Comp. Appl. Math.**, 219(2008), 110-122.(with N. C. Hu and W. P. Shen).
29. Uniqueness of simultaneous approximations in continuous function spaces, **Appl. Math. Let.**, 21(2008), 383-387.(with L. H. Peng).
30. Porous sets for mutually nearest points in Banach spaces, **Opuscula Math.**, 28(2008), 73-82. (with J. Myjak).
31. Newton's method for underdetermined systems of equations under the  $\gamma$ -condition, **Numer. Funct. Anal. Optim.**, 28(2007), 663-679. (with J. S. He and J. H. Wang).
32. Majorizing functions and convergence of the Gauss-Newton method for convex composite optimization, **SIAM J. Optimization**, 18(2), 2007, 613-642.(SCI). (with K. F. Ng).
33. Limit theory of restricted range approximations of complex-valued continuous functions, **Science in China**, 50(2007), 1427-1440. (with X. F. Luo).
34. Convergence of Newton's method for systems of equations with constant rank derivatives, **J. Comp. Math.**, 25(2007), 705-718 .(with X. B. Xu).
35. Convergence criterion and convergence ball of the King-Werner method under the radius Lipschitz condition, **Taiwanese J Math** ,11(2007), 239-253. (with X. T. Ye and L. Y. Hou, )
36. Convergence of the variants of the Chebyshev-Halley iteration family under the Holder condition of the first derivative, **J Comput. Appl. Math**, 203(2007), 279-288.(with X. T. Ye and W. P. Shen).
37. The SECQ, Linear Regularity, and the Strong CHIP for an Infinite System of Closed Convex Sets in Normed Linear Spaces, **SIAM J. Optimi.**, 18 (2007), 643-665.(with K. F. Ng and T. K. Pong).
38. Existence and porosity for a class of perturbed optimization problems in Banach spaces, **J Math Anal Appl.**, 325(2007), 987-1002.(with L. H. Peng).
39. On Base constraint Qualification for Infinite System of Convex Inequalities in Banach Spaces, **Act. Math. Sinica, New series**, 23(2007), 65-76.(with X. T. Ye).
40. On mutually nearest points of unbounded sets in Banach spaces, **J. Nonlinear Convex Anal.**, 8(2007), 165-177.(with J. Myjak).
41. Porosity of perturbed optimization problems in Banach spaces, **J. Math. Anal. Appl.**, 324(2006), 751-761.(with L. H. Peng).

42. Convergence of the family of the deformed Euler-Halley iterations under the Holder condition of the second derivative, **J Comput. Appl. Math**, 194(2006), 294-308.(with X. T. Ye).
43. Newtons method on Riemannian manifolds: Smale's pointestimate theory under the  $\gamma$ -condition, **IMA Numer. Anal.**, 26(2006), 228-251. (with J. H. Wang).
44. Uniqueness of the singular point of vector field on Riemannian manifold under the  $\gamma$ -condition, **J. of Complexity**, 22(2006), 533-548. (with J. H. Wang).
45. On generic well-posedness of restricted Chebyshev center problems in Banach spaces, **Act. Math. Sinica, New series**, 22(2006), 741-750. (with G.Lopez).
46. On best restricted range approximation in continuous complex-valued function spaces, **J Approx. Theory**, 136(2005), 159-181.(with K. F. Ng).
47. Strong uniqueness of the restricted Chebyshev center with respect to an RS-set in a Banach space, **J Approx. Theory**, 135(2005), 35-53.
48. Convergence of The Newton Method and Uniqueness of Zeros of Vector Fields on Riemannian Manifolds, **Science in China**, 48(2005), 1465-1478. (with J. H. Wang).
49. Strong CHIP for Infinite System of Closed Convex Sets in Normed Linear Spaces, **SIAM J Optimi.**, 16(2005), 311-340.(with K. F. Ng).
50. On Constraint Qualification for Infinite System of Convex Inequalities in a Banach Space, **SIAM J Optimi.**, 15(2005), 488-512. (with K. F. Ng).
51. On best approximations from RS-sets in complex Banach spaces, **Acta Math. Sinica, New series**, 21(2005), 31-38.
52. Convergence and Uniqueness Properties of Gauss-Newton's Method, **Computer Math. Applic.** 47(2004), 1057-1067. (with W. H. Zhang and X. Q. Jin)
53. On well posed mutually nearest and mutually furthest points problems in Banach spaces, **Act. Math. Sinica New series**, 20(2004), 147-156. (with R. X. Ni).
54. Strong uniqueness of best approximations in spaces of bounded linear operators, **Science in China (Ser. A)**, 47(2004), 339-351. (with J. S. He)
55. Ambiguous Loci of Mutually Nearest and Mutually Furthest Points in Banach Spaces **Nonlinear Anal.**, 58(2004), 367-377.(with H. K. Xu,)
56. Porosity of Mutually Nearest and Mutually Furthest Points in Banach Spaces. **J Approx. Theory**, 125(2003), 10-25. (with H. K. Xu).
57. On nonlinear simultaneous Chebyshev approximation problems, **J Math. Anal. Appl.**, 288(2003), 167-181. (with G. A. Watson).
58. Constraint Qualification, the Strong CHIP and Best Approximation with Convex Constraints in Banach Spaces, **SIAM J Optimi.**,14(2003), 584-607. (with K. F. Ng).

59. Convergence of Newton's method and uniqueness of the solution of equations in Banach spaces II, **Act. Math. Sinica New series**, 19(2003), 405-412. (with X. H. Wang).
60. On the united theory of the family of Euler-Halley type methods with cubical convergence in Banach spaces, **J Comp. Math.**, 21(2003)(2), 195-200. (with X. H. Wang).
61. On the relationship between the convergence ball of the Euler iteration in Banach spaces and its dynamical behavior on Riemann spheres, **Science in China(Ser. A)**, 46(2003), 376-382. (with H. Y. Wang and X. H. Wang).
62. On best uniform restricted range approximation in complex-valued continuous function spaces, **J Approx. Theory**, 120(2003), 71-84.
63. On best approximation to nonconvex sets and perturbation of nonconvex inequality systems in Hilbert spaces, **SIAM J Optim.**, 13(2002), 726-744. (with K. F. Ng).
64. Convergence of Gauss-Newton methods for convex composite optimization **Math. Program.**, 91(2002), 349-356. (with X. H. Wang).
65. A unified convergence theory for Newton's type methods for zeros of nonlinear operators in Banach spaces, **BIT, Numer. Math.**, 42(2002), 206-213. (with X. H. Wang and M. J. Lai).
66. Derivatives of Generalized Distance Functions and Existence of Generalized Nearest Points, **J Approx. Theory**, 115(2002), 44-55. (with R. X. Ni).
67. Nonlinearly constrained best approximation in Hilbert spaces, the strong CHIP and the basic constraint qualification condition, **SIAM J Optim.**, 13(2002), 228-239. (with X. Q. Jin).
68. On almost well-posed mutually nearest and mutually furthest points problems, **Numer. Funct. Anal. Optim.**, 23(3&4)(2002), 323-331. (with H. K. Xu).
69. The limit of best generalized peak norm approximations, **J Math. Anal. Appl.**, 263(2001), 683-694. (With G. A. Watson).
70. Local and Global Behaviors for Algorithms of Solving Equations, **Chinese Science Bulletin**, 46 (2001), 441-447. (with X. H. Wang).
71. On well posedness of best simultaneous approximation problems in Banach spaces, **Science in China(Ser. A)**, 44(2001), 1558-1570.
72. On Well Posed Generalized Best Approximation Problems, **J Approx. Theory**, 107(2000), 96-108.
73. On mutually nearest and mutually furthest ooints in reflexive Banach spaces. **J Approx. Theory**, 103(2000), 1-17.

74. On well posedness of farthest and simultaneous farthest problems in Banach spaces, (in Chinese), **Acta Math Sinica**, 43(2000),421-426. (with R. X. Ni).
75. On Convergence of the Gauss-Newton Method for Convex Composite Optimization, **Progress in Natural Sciences**, 10(2000), 470-473.
76. Local and global behaviors for algorithms of solving equations, **Chinese Science Bull**, 46(2001), 444-451. (with X.H. Wang).
77. Nonlinear minimization on  $C(X)$  and applications, **Numer Math, JCU**, 9(2000). (with W.S. Yang).
78. Best simultaneous approximation problems of an infinite set of functions, **Computer Math. Appl.** 37(1999), 1-9. (with G.A. Watson).
79. An estimate of Lipschitz constants for metric projections, **J. Math. Anal. Appl.**, 231(1999), 133-141. (with X.H. Wang and W.S. Yang).
80. On approximation using a generalized peak norm, **Communication in Applied Analysis**, 3(1999), 357-371. (with G.A. Watson).
81. On well posedness of simultaneous farthest problems in Banach spaces, (in Chinese), **Acta Math Sinica**, 42(1999). (with R. X. Ni).
82. Lipschitz continuity of best approximation and Chebyshev centers, **Chinese Science Bulletin**, 43(1998), 185-188. (with X. H. Wang).
83. Generalized weight approximation by maximal families with applications, **Acta Math. Sinica, New series**, 14(1998), 635-647. (with X.H. Wang).
84. Derivatives of furthest functions and existence of furthest points, (in Chinese), **Appl Math JCU** 13(1998), 55-60. (with R. X. Ni).
85. A note on sunsets in spaces of bounded linear operators, **Appl Math JCU**, 13B(1998), 359-361.
86. Almost Chebyshev set with respect to bounded subsets, **Science in China (Ser. A)**, 40(1997), 375-383. (with X.H. Wang).
87. Strong uniqueness in restricted rational approximation, **J. Approx. Theory**, 89(1997), 96-113. (with G.A. Watson).
88. On best simultaneous approximation, **J. Approx. Theory**, 91(1997), 332-348. (with G.A. Watson).
89. Characterzation and uniqueness of nonlinear uniform approximation, **Proc. Ed-  
ingburg Mathematical Society**, 40(1997), 473-482. (with W. S. Yang and G. A. Watson).
90. A variation of varisolvent  $L_1$  approximation, **Communications Appl. Anal.**, 1(1997), 119-130. (with W. S. Yang and G. A. Watson).

91. A class of best simultaneous approximation problems, **Computer Math. Applic.** 31(10)(1996), 45-53. (with G.A. Watson).
92. On vector valued function approximation using a peak norm, **Approx. Theory Appl.**, 12(2)(1996), 1-12. (with G. A. Watson).
93. Nonlinear approximation of set-valued maps in Banach spaces (in Chinese), **Acta Math Sinica**, 39(1996), 133-139.
94. Sunsets in spaces of bounded linear operators, **Chinese Annual Mathematics** 16A(1995), 60-69 (in Chinese); **Chinese J. Contemp. Math.**, 16(1995), 49-61 (in English).
95. Characterization of a best and a unique best approximation from constrained rationals, **Computer Math. Applic.**, 30(3-6)(1995), 51-57. (with G.A. Watson).
96. On approximation using a peak norm, **J Approx. Theory**, 77(1994), 266-275. (with G.A. Watson).
97. Strong unicity for monotone approximation by reciprocals of polynomials, **J Approx. Theory**, 78(1994), 19-29. (with W.S. Yang).
98. Lipschitz continuity of Chebyshev centers (in Chinese), **Kexue Tongbao**, 39(1994), 1833-1836. (with X.H. Wang).
99. Korovkin theorem in spaces  $L_p$ , (in Chinese), **J System Science and Mathematical Sciences**, 13(1993), 82-88.
100. Best simultaneous approximation by  $RS$ -sets,(in Chinese), **Numer Math. JCU**, 15(1993), 62-71.
101. Chebyshev approximation by functions having restricted ranges with equalities, **Numer Math. JCU**, English Ser., 2(1993), 57-66.
102. Uniform strong unicity for simultaneous rational Chebyshev approximation, (in Chinese), **Acta Math Sinica**, 35(1992), 460-471.
103. The existence of a class of functions on  $L_p(\mu, X)$  ( $0 < p < 1$ ), (in Chinese), **Chinese Annual Math.**, 12A(1991), 182-185. (with Z. Y. Wang).
104. On a problem on Chebyshev centers, (in Chinese), **Chinese Ann. Mathematics**, 12A Supplement (1991), 124-127.
105. On Chebyshev additive weight approximation, (in Chinese), **Chinese Ann. Mathematics**, 11A(1990), 308-313.
106. Simultaneous approximation with restricted ranges, (in Chinese), **Math Numer Sinica**, 12(1990), 9-16.
107. Almost  $K$ -Chebyshev subsets, (in Chinese), **Acta Math Sinica**, 33 (1990), 251-259.

108. Restricted approximations in normed linear spaces and their applications, (in Chinese), **Acta Math Appl Sinica**, 13(1990), 296-303.