

# CURRICULUM VITA

## Juncheng Wei

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### Personal information

- Born: March 27, 1968, P.R. China.
- Married with two kids

### Education

- Ph.D. University of Minnesota, September 1990- August 1994.
- B.S. Wuhan University, August 1985- July 1989.

### Professional Experience

- Canada Research Chair (Tier I) in Nonlinear Partial Differential Equations, October 2013-present
- Professor of Mathematics, University of British Columbia, Sept 2012-present
- Wei Lun Professor of Mathematics, Chinese University of Hong Kong, October 2011-September 2013
- Chair Professor in Mathematics, Chinese University of Hong Kong, August 2009-present
- Professor I in Mathematics, Chinese University of Hong Kong, August 2005-July 2009
- Professor II in Mathematics, Chinese University of Hong Kong, August 2003-July 2005
- Associate Professor in Mathematics, Chinese University of Hong Kong, September, 1999-July 2003
- Assistant Professor in Mathematics, Chinese University of Hong Kong, September, 1995-August 1999
- Postdoctoral Fellow, Nonlinear Analysis and Geometry Section, SISSA, Italy, September, 1994-September, 1995.
- Research Assistant, School of Mathematics, University of Minnesota, Summer 1992, 1993, 1994.
- Teaching Assistant, School of Mathematics, University of Minnesota, Fall 1990- Spring 1994.

### Research Area and Main Interests

- Nonlinear Partial Differential Equations, Concentration Phenomenon in Nonlinear PDEs and Elliptic Systems, De Giorgi Conjectures, Lane-Emden Equations, Phase Transitions, Nonlinear Analysis, Singular Perturbation Problems, Prescribing Curvature Problems, Higher-order Conformal Invariant Equations, Mean Curvature Flows, Harmonic Map Flows
- Reaction-Diffusion Systems, Pattern Formation, Mathematical Biology, Phase-transition in Material Sciences, Di-block and Triblock Copolymer Problems

### Awards and Honors

- **Jeffrey-Williams Prize, 2020, Canadian Mathematical Society**
- **SIMONS Fellowship in Mathematics, 2020**
- **Fellow of Royal Society of Canada, 2019**

- ISI Highly Cited Researcher, 2018
- Invited Speaker, International Congress of Mathematicians 2014, Korea
- Cheung Kong Chair Professorship 2015, Ministry of Education of China
- Canada Research Chair Tier I, 2013
- Morningside Silver Medal, International Congress of Chinese Mathematicians 2010
- First Class Award of Natural Science 2010, Ministry of Education of China
- Inclusion in ISIHighlyCited.com, 2010
- Research Excellence Award, Chinese University of HK, 2010
- Awards of the Joint Research Fund for HK and Macau Young Scholars, National Science Fund for Distinguished Young Scholars in China, 2009
- Croucher Senior Fellowship, 2005-2006
- Young Research Award, Chinese University of HK, 2004
- Outstanding Thesis Award, School of Mathematics, University of Minnesota, 1994

#### National and International Services

- Referee for: Earmarked Grant of RGC (HK), Nato Research Council (Netherlands), National Science Foundation of China, National Science Foundation, NSERC, Chilean Science Foundation.
- Review Panel, National Science Foundation 2014
- Review Panel, National Science Foundation 2015

#### Editorship

- Co-Managing Editor for DCDS-A
- Managing Editor for *Methods of Analysis and Applications*
- Editor for *Journal of Functional Analysis*
- Editor for *Journal of Differential Equations*
- Editor for *Comm. Pure Appl. Anal.*
- Editor for *Differential and Integral Equations*
- Associate Editor for *IMA Journal of Applied Mathematics*
- Editor for *Comm. Contemp. Math.*
- Editor for *IMA J. Applied Mathematics*
- Associate Editor for *Canadian Journal of Mathematics* (2013-2019)

#### Citations

According to AMS/Mathscinet/Citations, I am cited **9928** times by **2321** authors. I have a total of **131** coauthors.

According to Google Scholar, I am cited **16019** times. My h-index is **64**.

#### Representative Publications

- (with F. Hamel, Y. Liu, P. Sicbaldi and K. Wang) Half-space theorems for the Allen-Cahn equation and related problems *Journal für die Reine und Angew. Math. (Crelle's Journal)*

accepted for publication

- (with S.Kim and M. Musso) A compactness theorem of the fractional Yamabe problem, Part I: the non-umbilic conformal infinity *Journal of European Math Society* accepted for publication
- (with Juan Davila, Manuel del Pino and Monica Musso) Gluing methods for vortex dynamics in Euler equation **Arch Rational Mech Anal** 235 (2020), no. 3, 14671530.
- (with Manuel del Pino and Monica Musso) Existence and stability of infinite time bubble towers in the energy critical heat equation **Analysis PDE** 13 (2020), no. 1, 215274.
- (with Manuel del Pino and Juan Davila) Singularity formation for the two-dimensional harmonic map flow into  $S^2$  **Inventiones Mathematicae** 219 (2020), no.2, 345466.
- (with Yong Liu) Nondegeneracy, Morse index and orbital stability of the lump solution to the KP-I equation **Arch. Mech. Rational Anal.** 234 (2019), no. 3, 13351389.
- (with W. Ao H. Chan, A. Delatorre, M. Fontelos and Mar Gonzalez) On higher dimensional singularities for the fractional Yamabe problem: a non-local Mazzeo-Pacard program **Duke Math Journal** 168 (2019), no. 17, 32973411.
- (with W. Ao, Azahara Delatorre and Mar Gonzalez) A gluing approach for the fractional Yamabe problem with isolated singularities **Journal fur die reine und ang. Math. (Crelle's Journal)** accepted for publication
- (with Manuel del Pino and Monica Musso) Infinite time blow-up for the three dimensional energy critical heat equation **Analysis PDE** 13 (2020), no. 1, 215274.
- (with Y. Sire and Y. Zheng) Infinite time blow-up for half-harmonic map flow from  $R$  into  $S^1$  **American Journal of Mathematics** accepted for publication
- (with Kelei Wang) Finite Morse index implies finite ends **Comm. Pure Appl. Math.** 72(2019),5, 1044-1119
- (with Juan Davila and Manuel del Pino) Nonlocal  $s$ -minimal surfaces and Lawson cones **Journal of Differential Geometry** 109(2018), 111-175
- (with T. Kolokolnikov) Pattern formation in a reaction-diffusion system with space-dependent feed rate **SIAM Review** 60 (2018), no. 3, 626645.
- (with Yanyan Li and H. Xu) Multi-bump solutions of  $-\Delta u = K(x)u^{\frac{n+2}{n-2}}$  on Lattices in  $R^n$  **Journal fur die reine und ang. Math. (Crelle's Journal)** 2018, no. 743, 163211.
- (with M. Fazly) On finite Morse index solutions of higher order fractional Lane-Emden equation **American Journal of Mathematics** 139 (2017), no. 2, 433460
- (with Changfeng Gui and Yong Liu) Two-end solutions to the Allen-Cahn equation in  $R^3$  **Advances in Math** 320C (2017), 926-992.

- (with S. Kim and M. Musso) A non-compactness result on the fractional Yamabe problem in large dimensions and supplement material **Journal of Functional Analysis** 273 (2017), no. 12, 3759383
- (with WW Ao and CS Lin) On Non-topological Solutions of the  $A_2$  and  $B_2$  Chern-Simons System **Memoirs of American Mathematical Society** 239(2016), no. 1132.
- (with Changfeng Gui and Yong Liu) On variational characterization of four-end solutions of the Allen-Cahn equation in the plane **Journal of Functional Analysis** 271(2016), no. 10, 2673-2700.
- (with CS Lin and L. Zhang) Local profile of fully bubbling solutions to  $SU(n+1)$  Toda Systems **Journal of Europ.Math. Soc. (JEMS)** 18(2016), no. 8, 1707-1728.
- (with M. del Pino and F. Pacard) Serrin's overdetermined problems and constant mean curvature surfaces **Duke Math Journal** 164(2015), no.14, 2643-2722.
- (with M. Musso) Nondegeneracy of nonradial nodal solutions to Yamabe problem **Comm. Math. Physics** 340(2015), no.3, 1049-1107
- (with Xiaofeng Ren) A double bubble assembly as a new phase of a ternary inhibitory system **Arch Rat Mech Anal** 215(2015), no.3, 967-1034.
- (with Daomin Cao and Z. Liu) Regularization of point vortices pairs for the Euler equation in dimension two **Archive Rat. Mech. Anal.** 212(2014), no.1, 179-217
- (with Juan Davila, Louis Dupaigne and Kelei Wang) A Monotonicity Formula and a Liouville-type Theorem for a Fourth Order Supercritical Problem **Advances in Mathematics** 258(2014), 240-285
- (with H. Berestycki, TCLin and CY Zhao) On Phase-Separation Model: Asymptotics and Qualitative Properties **Archive Rational Mechanics Analysis** 208(2013), no.1, 163-200.
- (with H. Berestycki, S. Terracini and K. Wang) On Entire Solutions of an Elliptic System Modeling Phase Separations **Advances in Mathematics** 243(2013), pp. 102 - 126
- (with M. del Pino and M. Kowalczyk) Traveling waves with multiple and non-convex fronts for a bistable semilinear parabolic equation **Comm. Pure Appl. Math.** 66(2013), no.4, 481-547.
- (with M. del Pino and M. Kowalczyk) Entire Solutions of the Allen-Cahn Equation and Complete Embedded Minimal Surfaces of Finite Total Curvature **Journal of Differential Geometry** 83(2013), no.1, 67-131.
- (with Chang-Shou Lin and Dong Ye) Classification and nondegeneracy of  $SU(n+1)$  Toda system with singular sources. **Inventiones Mathematicae** 190(2012), no.1, 169-207.
- (with M. del Pino and M. Kowalczyk) On De Giorgi Conjecture in Dimensions  $N \geq 9$ . **Annals of Mathematics** 174 (2011), no.3, 1485-1569.

- (with WW Ao and CS Lin) On Non-topological Solutions of the  $A_2$  and  $B_2$  Chern-Simons System (112 pages) **Memoirs of American Mathematical Society** 239(2016), no. 1132.
- (with Juan Davila, Louis Dupaigne and Kelei Wang) A Monotonicity Formula and a Liouville-type Theorem for a Fourth Order Supercritical Problem **Advances in Mathematics** 258(2014), 240-285
- (with Frank Pacard) Stable solutions of the Allen-Cahn equation in dimension 8 and minimal cones. **Journal of Functional Analysis** 264(2013), no.5, 1131-1167.
- (with Frank Pacard and M. Musso) Finite-energy sign-changing solutions with dihedral symmetry for the stationary non linear Schrödinger equation **Journal of European Mathematical Society** 14(2012), no.6, 1923-1953.
- (with F. Ting) Multi-vortex non-radial solutions to the magnetic Ginzburg-Landau equations **Comm. Math. Phys.** Volume 317, Issue 1 (2013), Page 69-97
- (with Chang-Shou Lin and Chunyi Zhao) Sharp estimates for fully bubbling solutions of a SU(3) Toda system **Geom. Funct. Anal.** 22(2012), no.6, 1591-1635.
- (with M. del Pino and M. Kowalczyk) Traveling waves with multiple and non-convex fronts for a bistable semilinear parabolic equation **Comm. Pure Appl. Math.** 66(2013), no.4, 481-547.
- (with O. Druet and F. Robert) The Lin-Ni's problem for mean convex domains. **Memoirs of American Mathematical Society** November 30, 2011
- (with M. del Pino, M. Kowalczyk and F. Pacard) The Toda system and multiple-end solutions of autonomous planar elliptic problems. **Advances in Mathematics** 224(2010), no.4, 1462-1516.
- (with Manuel del Pino, M. Kowalczyk and Jun Yang) Interface foliation near minimal submanifolds in Riemannian manifolds with positive Ricci curvature **Geom. Funct. Anal.** 20(2010), no.4, 918-957.
- (with S. Yan) Infinitely many positive solutions for the nonlinear Schrödinger equations in  $R^N$  **Cal. Var. PDE** 37(2010), 423-439.
- (with F.H. Lin and W.M. Ni) On the number of interior spike solutions to singularly perturbed Neumann problems, **Comm. Pure Appl. Math.** 60 (2007), no. 2, 252-281.
- (with M. del Pino and M. Kowalczyk) Concentrations on curves for nonlinear Schrodinger equations, **Comm. Pure Appl. Math.** 60 (2007), no. 1, 113-146.
- (with O. Rey) Arbitrary Number of Positive Solutions For an Elliptic Problem with Critical Nonlinearity. **Journal of European Mathematical Society** 7(2005), no. 4, 449-476.
- (with T.-C. Lin) Ground state of  $N$  coupled Nonlinear Schrödinger Equations in  $R^n, n \leq 3$  **Communications in Mathematical Physics** 255(3)(2005), 629-653.

- (with X. Ren) Wriggled lamellar solutions and their stability in the Diblock copolymer problem , **SIAM J. Math. Anal.** 37(2005), no.2, 455-489.
- (with C.S. Lin) Locating the peaks of solutions via the Maximum Principle II: A local version of the method of moving planes. **Comm. Pure Appl. Math.** 6(2003), 784-809.
- (with M.J.Ward) Hopf bifurcations and oscillatory instabilities of spike solutions for the one-dimensional Gierer-Meinhardt model. **Journal of Nonlinear Sciences** 13(2003), 209-264.
- (with D. Iron and M.J. Ward) The stability of spike solutions to the one-dimensional Gierer-Meinhardt model, **Physica D.: Nonlinear Phenomena** 150 (2001), no. 1-2, 25–62.
- (with X. Ren) On energy minimizers of the di-block copolymer problem. **Interfaces and Free Boundaries** 5 (2003), no. 2, 193-238
- (with M. Winter) Spikes for the Two-Dimensional Gierer-Meinhardt System: The Weak Coupling Case **Journal of Nonlinear Sciences** 6(2001), 415-458.
- (with C. Gui) Mutiple interior peak solutions for some singularly perturbed Neumann problems, *J. Diff. Eqns.* 158(1999), 1-27
- On single interior spike solutions of Gierer-Meinhardt system: uniqueness, spectrum estimates, **Europ. J. Appl. Math.** 10(1999), 353-378.
- (with Xingwang Xu) Classification of solutions of high order conformally invariant equations, **Math. Annalen** 313(2)(1999), 207-228.
- (with W.-M. Ni and I. Takagi) On the location and profile of spike-layer solutions to singularly perturbed semilinear Dirichlet problems: intermediate solutions, **Duke Math. J.** 94 (1998), 597-618.
- (with W.-M. Ni) On the location and profile of spike-layer solutions to singularly perturbed semilinear Dirichlet problems, **Comm. Pure Appl. Math.** 48(1995), 723-761.

**Publications in refereed journals: 443**

**Book:**

- (with M. Winter) *Mathematical Aspects of Pattern Formation in Biological Systems* Applied Mathematical Sciences Series, Vol. 189, Springer 2014 , ISBN: 978-4471-5525-6.