

# Curriculum Vitae

## TRAN VU KHANH

### Contact information

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### Education

- *Ph.D. in Mathematics*: University of Padova, Padova, Italy; 2007 - 2009.  
Thesis title: *A general method of weights in the  $\bar{\partial}$ -Neumann problem*.  
Advisor: Giuseppe Zampieri. Members of Committee: J. Kohn (president), E. Straube, J. McNeal.
- *Undergraduate student*: Hochiminh University of Natural Sciences, Hochiminh city, Vietnam; 2001 - 2005.  
Thesis title: *Quasi-boundary valued method for non-homogeneous backward parabolic problems*.  
Advisor: Dang Duc Trong.

### Research interests

Harmonic analysis, Partial differential equations, Several complex variables, Cauchy-Riemann geometry, Geometric analysis, Inverse problems, Numerical analysis.

### Academic appointments

- *Postdoctoral Fellow*: University of Padova, Italy; August 2011- current.
- *Lecturer*: University of Sciences, Vietnam National University of Hochiminh city, Viet Nam; March 2010 - July 2011.
- *Teaching assistant*: University of Sciences, Vietnam National University of Hochiminh city, Vietnam; 2005 - 2006.
- *High school teacher of mathematics*: High school for the Gifted , Vietnam National University of Hochiminh City, Vietnam; 2005 - 2006:

### Invited visit

- *Visiting researcher*: Department of Mathematics, POSTECH, South Korea; February – March, 2013.
- *Senior researcher*: Vietnam institute for Advanced Study in Mathematics (VIASM), Vietnam; July–September, 2012.
- *Junior visiting professor*: University of Padova, Italy; June–August, 2010.

### Academic honors and awards

- 2011: Mathematical Prize of Institute of Mathematics Hanoi, Vietnam (for outstanding research).
- June 2010: Grant from National Institute for Advanced Mathematics F. Severi for visiting University of Padova, Italy.
- 2007 - 2009: PhD Scholarship for international students from University of Padova, Italy (the only one in university get the absolute point 100/100).
- July 2006: Scholarship from ICE-EM Australian Graduate School in Mathematics for advanced postgraduate researchers, Australia.
- 2001 - 2005: Scholarship from Hochiminh University of Sciences for Good students, Vietnam.
- 2002: Third Prize of Vietnam National Selection in Mathematics in Algebra for undergraduate students, Vietnam.
- 2001: Third Prize of Vietnam National Selection in Mathematics for high school students, Vietnam.

### Publications

16. *Lower bound for the geometric type from a generalized estimate in the  $\bar{\partial}$ -Neumann problem - a new approach by peak functions*. **Michigan Math. J.** (accepted) <http://arxiv.org/abs/1302.0791>.
15. *Hypoellipticity of the  $\bar{\partial}$ -Neumann problem at exponentially degenerate points* (with Luca Baracco and Giuseppe Zampieri). **Asian J. Math.** (accepted) <http://arxiv.org/abs/1004.0919>.
14. *Loss of derivatives in the infinite type* (with Stefano Pinton and Giuseppe Zampieri). **Pure Appl. Math. Q.** (accepted) <http://arxiv.org/abs/1009.4395>.
13. *Regularity at the boundary and tangential regularity of solutions of the Cauchy-Riemann system* (with Giuseppe Zampieri). **Pacific J. Math.** (accepted) <http://arxiv.org/abs/1104.1407>.
12. *Supnorm and  $f$ -Hölder estimates for  $\bar{\partial}$  on convex domains of general type in  $\mathbb{C}^2$* . **J. Math. Anal. Appl.** 403 (2013), 522–531.
11. *Compactness of the  $\bar{\partial}$ -Neumann operator on  $q$ -pseudoconvex domain* (with Giuseppe Zampieri). **Complex Var. Elliptic Equ.** 57 (2012) 1325–1337.
10. *Propagation of regularity for solutions of the Kohn-Laplacian in a flat point* (with Luca Baracco and Giuseppe Zampieri). **Adv. Math.** 230 (2012) 1972–1978.
9. *Necessary geometric and analytic conditions for general estimates in the  $\bar{\partial}$ -Neumann problem* (with Giuseppe Zampieri). **Invent. Math.** 188 (2012), 729–750.
8. *Compactness estimates for  $\square_b$  on CR manifolds* (with Stefano Pinton and Giuseppe Zampieri). **Proc. Amer. Math. Soc.** 140 (2012), 32229–3236.

7. *Loss of derivatives for systems of complex vector fields and sums of squares* (with Stefano Pinton and Giuseppe Zampieri). **Proc. Amer. Math. Soc.** 140 (2012), 519–530.
6. *Estimates for regularity of the tangential  $\bar{\partial}$  system* (with Giuseppe Zampieri). **Math. Nachr.** 284 (2011), 2212 – 2224.
5. *Subellipticity of the  $\bar{\partial}$ -Neumann problem on a weakly  $Q$ -pseudoconvex/concave domain* (with Giuseppe Zampieri). **Adv. Math.** 228 (2011), 1938–1965.
4. *Regularity of the  $\bar{\partial}$ -Neumann problem at infinity type* (with Giuseppe Zampieri). **J. Funct. Anal.** 259 (2010), 2760–2775.
3. *Uniform regularity in a wedge and regularity of traces of CR functions* (with Luca Baracco and Stefano Pinton). **J. Geom. Anal.** 20 (2010), 996–1007.
2. *The  $\bar{\partial}$ -Neumann problem*. **Seminario Dottorato 2009–2010**, (2010), 10–18.
1. *A nonlinear 1-D case backward heat problem : Regularization and error* (with Dang Duc Trong, Pham Hoang Quan and Nguyen Huy Tuan). **Z. Anal. Anwendungen** 26 (2007), 231–245.

### Preprints

- **Tran Vu Khanh**—*Lower bounds on the Kobayashi metric near a point of infinite type*, <http://arxiv.org/abs/1302.0789>.
- **Tran Vu Khanh**—*Local estimates and hypoellipticity of the Kohn-Laplacian  $\square_b$  on pseudoconvex CR manifolds of infinity type*.
- **Tran Vu Khanh**—*Global hypoellipticity of the Kohn-Laplacian  $\square_b$  on pseudoconvex CR manifolds*, <http://arxiv.org/abs/1012.5906>.
- **Tran Vu Khanh**—*A general estimates for the  $\bar{\partial}$ -Neumann problem*.
- **Tran Vu Khanh** and **Giuseppe Zampieri** — *Precise subelliptic estimates for a class of special domains*, <http://arxiv.org/abs/0812.2560>.

### Teaching experiments

- **Teaching in Vietnamese language:** Calculus 1 (2010), Calculus 2 (2011); High-school Mathematics (2006).
- **Teaching in English language:** Pre-Calculus (2010), Calculus 1 (2010), Linear Algebra (2011).
- **Teaching on Master Courses:** Complex analysis (2011, 2012).

### Conference and Seminar Talks

- *The  $f$ -Property and applications*; **KSCV Workshop #20**, Korea; 22-25 February, 2013.
- *Estimates and Regularity of the  $\bar{\partial}$ -Neumann Problem*: **Seminar**; National University of Singapore, Singapore; 29 November, 2012.
- *Necessary and sufficient condition for generalized estimation of the  $\bar{\partial}$ -Neumann problems*: Plenary talk, **Vietnam – France Joint Congress**; University of Hue, Vietnam; August 20-24, 2012.

- *General estimates and regularity of complex PDEs*: Invited speaker, **CR Geometry and PDE's - V: In honor of J. J. Kohn in his 80th birthday**; Levico T., Trento, Italy; June 5-8, 2012
- *A general estimate for the  $\bar{\partial}$ -Neumann problem*: Colloquium lecture, **Institute of Mathematics Hanoi**; Hanoi Vietnam; May 4, 2012.
- *Introduction to PDEs in Several Complex Variables*: **Mathematical Summer Meeting 2011**; University of Science, Hochiminh City, Vietnam; August 1, 2011.
- *The  $\bar{\partial}$ -Neumann problem*: **Seminario Dottorato**; University of Padova, Italy; 14 October 2009.
- *Subelliptic and superlogarithmic estimates for the  $\bar{\partial}$ -Neumann problem*: **The 17th International Conference on Finite or Infinite Dimensional Complex Analysis and Applications**; Hochiminh City, Vietnam; August 3 to 7, 2009.
- *Precise subelliptic estimates for regular coordinate domains*: **Seminar in Algebraic and Complex Analysis**; University of Padova, Italy; January 14, 2009.
- *Catlin's weights in estimates for  $\bar{\partial}$ -Neumann problem*: **CR Geometry and PDE's-III**; Levico T. , Trento, Italy; June 22-27, 2008.
- *A nonlinear backward parabolic problem regularization and error estimates*: **ICE-EM Graduate School in Mathematics**; The University of Queensland, Australia; July 3-21, 2006.

#### Professional services

- Referee for Acta Mathematica Vietnamica, Mathematische Zeitschrift.
- Review for Mathematical Reviews.
- Advisor for Master degree theses at University of Sciences, Hochiminh city, Vietnam.

#### References

- Professor **Giuseppe Zampieri** (supervisor, for both research and teaching)  
Department of Mathematics, University of Padova, Italy  
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- Professor **Joseph John Kohn**  
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