Van Tien NGUYEN (dob 08/Dec/1988, Vietnamese)

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RESEARCH INTERESTS

Analysis of PDEs with a focus on singularity formation of solutions and long-time asymptotic behaviors. I'm interested in PDEs arising from physics, geometry and mathematical biology:

- Nonlinear Reaction-Diffusion equations like semilinear parabolic equations/systems, higher order parabolic equations;

- Geometric evolution equations like the harmonic map heat flow, wave maps;

- Nonlinear Aggregation-Diffusion equations like the Keller-Segel equation;

- Nonlinear wave equations.

I'm also interested in numerical methods for PDEs, in particular in blowup problems.

POSITIONS

Research Associate   Sep 2019 - Aug 2022
   at New York University - Abu Dhabi Campus, Department of Mathematics.
Postdoctoral Associate   Jan 2015 - Aug 2019
   at New York University - Abu Dhabi Campus, Department of Mathematics.

EDUCATION

PhD in Mathematics at **Université Sorbonne Paris Nord**, France   Nov 2011 - Dec 2014

   Dissertation: *Numerical and theoretical study of the blowup profile for nonlinear parabolic equations.*

   Committee: Fred B. Weissler, Hatem Zaag (supervisor), Pierre Raphaël, Julio D. Rossi, Jérémie Szeftel, Slim Tayachi and Linda El Alaoui (co-supervisor).

MS in Mathematics at **Université Sorbonne Paris Nord**, France   Sep 2010 - Jun 2011

MS in Mathematics at **Université d'Orléans**, France   Sep 2010 - Jun 2011

BS in Mathematics and Computer Science (Honor program)
   at **University of Science**, Vietnam   Sep 2006 - Jun 2010

TEACHING EXPERIENCE

Linear Algebra: Fall 2019, Fall 2021
at New York University - Abu Dhabi Campus, Department of Mathematics.
PhD student mentoring: G. K. Duong   2016-2019
co-supervisor with Hatem Zaag at Université Sorbonne Paris Nord.

PUBLICATIONS & PREPRINTS [*]

[1] C. Collot, T. Ghoul, N. Masmoudi and V. T. Nguyen*, **Collapsing-ring blowup solutions for the Keller-Segel system in three dimensions and higher**, 2022. [ArXiv]

[2] C. Collot, T. Ghoul, N. Masmoudi and V. T. Nguyen*, **Refined description and stability for singular solutions of the 2D Keller-Segel system**, COMM. PURE APPL. MATH, 2021. [DOI]

[3] C. Collot, T. Ghoul, N. Masmoudi and V. T. Nguyen*, **Spectral analysis for singularity formation of the two dimensional Keller-Segel system**, ANNALS OF PDE, (to appear) [arXiv]

[4] T. Ghoul, V. T . Nguyen* and H. Zaag, **Construction of type I blowup solutions for a higher order semilinear parabolic equation**, Adv. Nonlinear Analysis, 2020. [DOI]

[5] T. Ghoul, S. Ibrahim and V. T . Nguyen*, **On the stability of type II blowup for the 1-corotational energy supercritical harmonic heat flow**, Analysis & PDE, 2019. [DOI]

[6] T. Ghoul, V. T . Nguyen* and H. Zaag, **Construction and stability of blowup solutions for a non-variational semilinear parabolic system**, Annales de l'Institut Henri Poincaré C, Analyse non linéaire, 2018. [DOI]

[7] V. T . Nguyen* and H. Zaag, **Finite degrees of freedom for the refined blowup profile for a semilinear heat equation**, Ann. Scient. de l'école Normale Supérieure, 2017. [Journal site]

[8] T. Ghoul, S. Ibrahim and V. T . Nguyen*, **Construction of type II blowup solutions for the 1-corotational energy supercritical wave maps**, J. Differential Equations, 2018. [DOI]

[9] T. Ghoul, V. T . Nguyen* and H. Zaag, **Construction and Stability of type I blowup solutions for non-variational semilinear parabolic systems**, Adv. Pure Appl. Math., 2019. [DOI]

[10] T. Ghoul, V. T . Nguyen* and H. Zaag, **Blowup solutions for a reaction-diffusion system with exponential nonlinearities**, J. Differential Equations, 2018. [DOI]

[11] G. K. Duong, V. T . Nguyen* and H. Zaag, **Construction of a stable blowup solution with a prescribed behavior for a non-scaling invariant semilinear heat equation**, Tunisian J. Math., 2019. [DOI]

[12] T. Ghoul, V. T . Nguyen* and H. Zaag, **Blowup solutions for the exponential reaction-diffusion equation involving a critical power nonlinear gradient term**, J. Differential Equations., 2017. [DOI]

[13] T. Ghoul, V. T . Nguyen* and H. Zaag, **Refined regularity of the blow-up set linked to asymptotic behaviors for the semilinear heat equation**, Adv. Nonlinear Stud., 2017. [DOI]

[14] V. T . Nguyen*, **Numerical analysis of the rescaling method for parabolic problems with blow-up in finite time**, Phys. D: Nonlinear Phenomena, 2017. [DOI].

[15] V. T . Nguyen*, **On the blow-up results for a class of strongly perturbed semilinear heat equations**, Discrete Contin. Dyn. Syst., 2015. [DOI]

[16] V. T . Nguyen* and H. Zaag, **Construction of a stable blow-up solution for a class of strongly perturbed semilinear heat equations**, Ann. Scuola Norm. Sup. Pisa Cl. Sci., 2016. [DOI]

[17] V. T . Nguyen* and H. Zaag, **Blow-up results for a strongly perturbed semilinear heat equation: Theoretical analysis and numerical method**, Analysis & PDE, 9(1), 2016. [DOI]

Service   **Reviewer**: J. Geom. Anal., J. Differential Equations, SIAM J. Math. Anal., Int. J. Geom. Methods Mod. Phys., J. Math. Pures Appl., J. Math. Physics, Arch. Rat. Mech. Anal, ...

PARTICIPATION
- Workshop on *Singular Problems Associated to Quasilinear Equations*, in honor of of Marie-Françoise Bidaut-Véron and Laurent Véron, ShanghaiTech & Masaryk, June 2020
- Workshop on *PDEs and Geometric Measure Theory*, ETH Zürich, Switzerland — Oct 2018
- Eighth Euro-Japanese workshop on blowup, Sendai, Japan — June 2018
- Conference *New trends on Partial Differential Equations: Celebrating the Contributions of Fanghua Lin and Jalal Shatah* at NYU Abu Dhabi, UAE — Jan 2018
- Summer school and conference *Focus Program on Nonlinear Dispersive Partial Differential Equations and Inverse Scattering* at The Fields Institute, Toronto, Canada — Aug 2017
- Conference *Fluids, dispersion and blow-up* at IHP, Paris, France — Jul 2017
- International Conference on *Elliptic and Parabolic Problems*, Gaeta, Italy — May 2017
- Summer school and conference *Nonlinear Waves 2016* at IHES, France — Jul 2016
- Journées Jeunes EDPistes Français, Saint Brévin, France — Apr 2015
- Sixth Euro-Japanese workshop on blow-up, Tokyo, Japan — Sep 2014
- Summer school CIMPA *EDPs Non Linéaires et Applications*, Tanger, Morocco — May 2014
- Summer school ICTP *Mathematics for planet earth program*, Trieste, Italy — May 2013
- Fifth Euro-Japanese workshop on blow-up, Luminy, France — Sep 2012
- Workshop on quasilinear equations and singular problems, Tours, France — Jun 2012

SOFT SKILLS   Programming: C, C++, MATLAB, Maple, Mathematica, Freefem++.
Languages: English, French.

REFERENCES

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