

# CURRICULUM VITAE

## Veselin Filev

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### Education

- **Ph.D.** Physics, University of Southern California, Los Angeles (2008)  
Thesis title: “*Aspects of the Holographic Study of Flavour Dynamics*”  
Thesis advisor: Clifford V. Johnson.
- **M.Sc.** Theoretical and Mathematical Physics, Sofia University, Bulgaria (2003)  
Thesis title: “*Semi-Classical Analysis of Rotating String in Pilch-Warner Geometry*”  
Thesis advisor: Radoslav. C. Rashkov.
- **B.Sc.** Physics, Sofia University, Bulgaria (2002)  
Thesis title: “*The AdS/CFT Correspondence in String Theory*”

### Employment and Affiliation

- Assistant Professor, Bulgarian Academy of Sciences (2017-present)
- Research Associate, Dublin Institute for Advanced Studies (2016-present)
- Postdoctoral Fellow, Dublin Institute for Advanced Studies (2012-2016)
- Postdoctoral Fellow, Max Planck Institute for Physics, Munich (2010-2012)
- Postdoctoral Fellow, Dublin Institute for Advanced Studies (2008-2010)
- Graduate Assistant, University of Southern California (2003-2008)

## **Funding History**

- Bulgarian NSF grant DN08/3, 2017-2020
- ICHEC "Discovery" project for computational resources, July (2016)
- ICHEC "Discovery" project for computational resources, November (2015)
- IRCSET-Marie Curie International Mobility Fellowship, (20010-2013)
- ESF grant for small workshops, Fall 2012
- Government of Ireland, IRCSET Postdoctoral Fellowship, (2008-2010)
- University of Southern California, Departmental Summer Research Award (2006-2008)
- University of Southern California, Departmental Award (2003-2005)
- Foundation Evrika, Stipend for young talents (1998-2003)
- Sofia University "St. Kliment Ohridski", Stipend for academic excellence (1998-2003)

## **Refereeing Experience**

- Journal of High Energy Physics, Physical Review D, Physics Letters B, Journal of Physics A, Advances in High Energy Physics, Classical and Quantum Gravity, Central European Journal of Physics, Frontiers in Physics,

## **Conference Organisation**

- Holography and Magnetic Catalysis of Chiral Symmetry Breaking (November 2012)  
Dublin Institute for Advanced Studies

## **Conferences and Workshops**

- Workshop on Quantum Geometry, Field Theory and Gravity, Corfu (September 2019)
- Lie Theory And Its Applications in Physics, Varna (June 2019)
- Matrix Models for Noncommutative Geometry and String Theory, Vienna, (July 2018)
- COST Action MP1405 "Quantum Structure of Spacetime", III. Annual Workshop : Quantum Spacetime '18, Sofia (Feb 2018)
- VII Workshop on Geometric Correspondences of Gauge Theories, Trieste (July 2017)

- 10-th International Symposium "Quantum Theory and Symmetries" (QTS10), Varna (June 2017)
- 12-th International Workshop "Lie Theory and Its Applications in Physics" (LT12), Varna (June 2017)
- 3rd National Congress of Physical Sciences, Sofia (October 2016)
- 3rd Workshop on Holography, Gauge Theories, and Black Holes (July 2016)  
University of Southampton, Southampton
- Workshop on Holography and Condensed Matter (Sept 2015)  
Universita Degli Studi Di Perugia, Perugia
- CERN: European School of High-Energy Physics (Sept 2015)  
Bansko, Bulgaria (*discussion leader*)
- eNLarge Horizons (June 2015)  
University of Autonoma de Madrid, Madrid
- Irish Quantum Field Theory Meeting (May, 2015)  
Dublin Institute for Advanced Studies, Dublin
- Gauge/Gravity Duality (April 2015)  
Galileo Galilei Institute for Theoretical Physics, Florence
- String Theory and Its Applications (September 2014)  
Mainz Institute for Theoretical Physics, Mainz
- Gauge/Gravity Duality (August 2013)  
Max Planck Institute for Physics, Munich
- String Theory (July 2013)  
Centro de Ciencias de Benasque Pedro Pascual, Benasque
- Irish Quantum Foundations (May 2013)  
Castletown House Co. Kildare
- Holography and Magnetic Catalysis of Chiral Symmetry breaking (November 2012)  
Dublin Institute for Advanced Studies (*organizer*)
- Gravity Theories and their Avatars (July 2012)  
Crete Center of Theoretical Physics, Heraklion
- Arnold Sommerfeld School: "Algebraic Geometry for String Theorists" (October 2011)  
Arnold Sommerfeld Center for Theoretical Physic, Munich

- Workshop on Fields and Strings Cosmology-Phenomenology (September 2011)  
Corfu Summer Institute, Corfu, Greece
- Quantum Theory and Symmetries 7, Prague (Aug 2011)
- Large N gauge theories (June 2011)  
Galileo Galilei Institute for Theoretical Physics, Florence
- Aspects of Holography and Gauge/string duality (September 2010)  
DESY Hamburg, Germany
- Aspects of Holography and Gauge/string duality (August 2010)  
APSCTP Headquarters, POSTECH, Pohang, Korea
- AdS Holography and the Quark-Gluon Plasma (August 2010)  
Erwin Schrödinger Institute, Vienna
- Summer School SFP 10 (July, 2010)  
Technical University Munich
- 17th Irish Quantum Field Theory Meeting (May, 2010)  
Dublin Institute for Advanced Studies, Dublin
- Workshop on Noncommutativity and Matrix Models (November 2009)  
Dublin Institute for Advanced Studies, Dublin
- Advances in Theoretical Physics (November 2009)  
Dublin Institute for Advanced Studies, Dublin
- 2009 IRCSET Symposium (September 2009)  
Dublin, Ireland
- 14th Itzykson Meeting on String Theory (June 2009)  
Institut de Physique Théorique, Saclay
- String Duals of Finite Temperature and Low-Dimensional Systems (May-June 2009)  
Aspen Center for Physics, Aspen
- Irish quantum field theory meeting (May 2009)  
Trinity College, Dublin
- AdS Collective (February 2009)  
UAM, Madrid
- Winter School on Strings, Supergravity and Gauge Theories (February 2009)  
CERN

- Southern California Strings Seminar (December 2008)  
University of Southern California
- Summer School on Particles, Fields and Strings (July 2008)  
University of British Columbia
- Southern California Strings Seminar (April 2008)  
California Institute of Technology
- Summer School on Particle Physics, Cosmology and Strings (August 2007)  
Perimeter Institute for Theoretical Physics
- Southern California Strings Seminar (May 2007)  
University of California, Irvine
- Southern California Strings Seminar (September 2005, December 2006)  
University of California, Los Angeles
- Southern California Strings Seminar (May 2005, September 2006)  
University of Southern California
- Theoretical Advanced Summer Institute (June 2005)  
University of Colorado, Boulder
- Gravity, Astrophysics and Strings at the Black Sea (June 2002)  
Kiten, Bulgaria

## Lectures and Presentations

1. Workshop on Quantum Geometry, Field Theory and Gravity, Corfu (September 2019)  
"Gravity Dual of the BD Matrix Model"
2. Lie Theory And Its Applications in Physics, Varna (June 2019), "Critical point in a holographic defect field theory"
3. Matrix Models for Noncommutative Geometry and String Theory, Vienna, (July 2018),  
"Phase structure of a holographic defect field theory with a domain wall"
4. "Quantum Structure of Spacetime", Sofia (February 2018), "A Quantum Critical Point in 'twisted' YM theory"
5. CERN SEENET-MTP PhD Training Program, Sofia (October 2017) "Introduction to AdS/CFT with flavours"
6. 10-th International Symposium "Quantum Theory and Symmetries" (QTS10), Varna (June 2017) "A Computer Test of Holographic Flavour Dynamics"

7. 3rd National Congress of Physical Sciences, Sofia (October 2016) “A Computer Test of Holographic Flavour Dynamics”
8. 3rd Workshop on Holography, Gauge Theories, and Black Holes, Southampton (July 2016) “Testing Holography with Flavours”
9. Bulgarian Academy of Sciences, Sofia (March 2016) “A Computer Test of Holographic Flavour Dynamics”
10. Max Planck Institute for Physics, Munich (Dec 2015) “A Computer Test of Holographic Flavour Dynamics”
11. Workshop on Holography and Condensed Matter, Perugia (Sept 2015) “Testing AdS/CFT with flavours on a computer”
12. eNLarge Horizons, Madrid (June 2015) “Testing AdS/CFT with flavours on a computer”
13. String Theory and Its Applications, Mainz (Sept 2014) “A Quantum Critical Point from Flavours on a Compact Space”
14. NUI Maynooth (October 2013), “Holographic Magnetic Catalysis”
15. University of Barcelona (June 2013), “Magnetic Catalysis in Compact Spaces”
16. Instituto Superior Tecnico (June 2013), “Magnetic Catalysis in Compact Spaces”
17. Irish Quantum Foundations (May 2013), “Magnetic Catalysis in Compact Spaces”
18. University of Porto (October 2012), “Unquenched Holographic Magnetic Catalysis”
19. University of Santiago de Compostela (October 2012), “Unquenched Holographic Magnetic Catalysis”
20. DIAS board meeting, Dublin (June 2012), “Unquenched Holographic Magnetic Catalysis”
21. Quantum Theory and Symmetries 7, Prague (Aug 2011), “Unquenched Holographic Magnetic Catalysis”
22. Vienna University of Technology (Aug 2011), “Unquenched Holographic Magnetic Catalysis”
23. GGI workshop on “Large N gauge theories” , Florence (June 2011), “Unquenched Holographic Magnetic Catalysis”
24. Max Planck Institute for Physics, Munich (Nov., 2010), “A two matrix model at strong coupling”

25. DESY workshop on “Quantum Field Theory Developments and Perspectives” (Sept, 2010), “ $N = 2$  Flavoured SYM Theory on  $S^3$  in an External Magnetic Field”
26. APSCCTP workshop on “Aspects of Holography and Gauge/string duality” (Aug., 2010), “Holographic Chiral Dynamics in External Fields” (I and II)
27. ESI workshop on “AdS Holography and the Quark-Gluon Plasma” (August, 2010), “Flavored SYM theory on  $S^3$  with various control parameters”
28. Bulgarian Academy of Sciences (July 2010), “Holographic Chiral Dynamics in external fields”
29. 17th Irish Quantum Field Theory Meeting (May, 2010), “1+2 D Defect Field Theory in a Magnetic Field. A Holographic Study”
30. Aspen Center For Physics (June 2009), “Universal holographic chiral dynamics in external fields”
31. Max Planck Institute for Physics, Munich (March 2009), “Holographic chiral dynamics in external fields”
32. Dublin Institute for Advanced Studies (March 2009), “Holographic chiral dynamics in external fields”
33. University of Santiago de Compostela (March 2009), “Holographic chiral dynamics in external fields”
34. Southern California Strings Seminar (December 2008), “Holographic chiral dynamics”
35. University of Southampton (October 2008), “Holographic study of magnetic catalysis of chiral symmetry breaking”
36. University of Washington (October 2007), “Large  $N$  gauge theories in an external magnetic field with quarks”
37. University of California, Los Angeles (October 2007), “Large  $N$  gauge theories in an external magnetic field with quarks”
38. University of Southern California (October 2007), “Large  $N$  gauge theories in an external magnetic field with quarks”
39. University of British Columbia (November 2006), “Flavoured large  $N$  gauge theory in an external magnetic field”
40. Simon Fraser University (November 2006), “Adding flavour in AdS/CFT correspondence”

41. University of Southern California (November 2006), "Progress report on new phase transitions in flavourdynamics"
42. University of Southern California (April 2005), "Aspects of the AdS/CFT correspondence"

## Teaching Experience

- CERN SEENET-MTP PhD Training Program (2017),  
Lecturer
- CERN: 2015 European School of High-Energy Physics  
Discussion Leader
- "Fundamentals of Physics I: Mechanics and Thermodynamics"  
University of Southern California (2003, 2006-2008)
- "Fundamentals of Physics III: Optics and Modern Physics"  
University of Southern California (2004-2005)

## Publications

1. V. G. Filev, R. C. Rashkov, "Critical point in a holographic defect field theory", *JHEP* **1911**, (2019) 027, arXiv:1905.06472 [hep-th].
2. Y. Asano, V. G. Filev, S. Kováčik and D. O'Connor, "The non-perturbative phase diagram of the BMN matrix model," *JHEP* **1807**, 152 (2018), arXiv:1805.05314 [hep-th].
3. Y. Asano, V. G. Filev, S. Kováčik and D. O'Connor, "A Computer Test of Holographic Flavour Dynamics II," *JHEP* **1803**, 055 (2018) arXiv:1612.09281 [hep-th].
4. V. G. Filev and D. O'Connor, "Quantised relativistic membranes and non-perturbative checks of gauge/gravity duality," *J.Phys.Conf.Ser.* **965** (2018) no.1, 012015, arXiv:1710.02565 [hep-th].
5. Y. Asano, V. G. Filev, S. Kováčik and D. O'Connor, "Precision Test of Holographic Flavourdynamics," *Springer Proc. Math. Stat.* **255**, 173 (2017).
6. Y. Asano, V. G. Filev, S. Kováčik, and D. O'Connor, "The Flavoured BFSS Model at High Temperature," *JHEP* **1701**, 113 (2017), arXiv:1605.05597 [hep-th].
7. D. O'Connor and V. G. Filev, "Membrane Matrix models and non-perturbative checks of gauge/gravity duality," *PoS CORFU* **2015** (2016), arXiv:1605.01611 [hep-th].



8. V. G. Filev and D. O'Connor, "A Computer Test of Holographic Flavour Dynamics," JHEP **1605**, 122 (2016), arXiv:1512.02536 [hep-th].
9. V. G. Filev and D. O'Connor, "The BFSS model on the lattice," JHEP **1605**, 167 (2016), arXiv: 1506.01366 [hep-th].
10. V. G. Filev and D. O'Connor, "Commuting Quantum Matrix Models", JHEP **1503**, 024 (2015), arXiv: 1408.1388 [hep-th].
11. V. G. Filev and D. Zoakos, "Multiple Backreacted Flavour Branes," JHEP **1412**, 186 (2014), arXiv:1410.2879 [hep-th].
12. V. G. Filev, "A Quantum Critical Point from Flavours on a Compact Space," JHEP **1408**, 105 (2014), arXiv:1406.5498 [hep-th].
13. V. G. Filev, M. Ihl and D. Zoakos, "Holographic Bilayer/Monolayer Phase Transitions," JHEP **1407**, 043 (2014), arXiv:1404.3159 [hep-th].
14. V. G. Filev and D. O'Connor, "On the Phase Structure of Commuting Matrix Models," JHEP **1408**, 003 (2014), arXiv:1402.2476 [hep-th].
15. D. Arnaudov, V. Filev and R. Rashkov, "Flavours in global Klebanov-Witten background," JHEP **1403**, 023 (2014), arXiv:1312.7224 [hep-th].
16. V. G. Filev, M. Ihl and D. Zoakos, "A Novel (2+1)-Dimensional Model of Chiral Symmetry Breaking," JHEP **1312**, 072 (2013), arXiv:1310.1222 [hep-th].
17. V. G. Filev and D. O'Connor, "Multi-matrix models at general coupling," J. Phys. A: Math. Theor. **46**, 475403 (2013), arXiv:1304.7723 [hep-th].
18. G. Itsios, V. G. Filev and D. Zoakos, "Backreacted flavor in non-commutative gauge theories," JHEP **1306**, 092 (2013) , arXiv:1304.5211 [hep-th].
19. D. O'Connor and V. G. Filev, "Near commuting multi-matrix models," JHEP **1304**, 144 (2013) arXiv:1212.4818 [hep-th].
20. V. G. Filev and M. Ihl, "Flavoured Large N Gauge Theory on a Compact Space with an External Magnetic Field," JHEP **1301**, 130 (2013) [arXiv:1211.1164 [hep-th]].
21. M. Ammon, V. G. Filev, J. Tarrío and D. Zoakos, "D3/D7 Quark-Gluon Plasma with Magnetically Induced Anisotropy," JHEP **1209**, 039 (2012) [arXiv:1207.1047 [hep-th]].
22. J. Erdmenger, V. G. Filev and D. Zoakos, "Magnetic Catalysis with Massive Dynamical Flavours," JHEP **1208** (2012) 004 [arXiv:1112.4807 [hep-th]].
23. V. G. Filev and D. Zoakos, "Towards Unquenched Holographic Magnetic Catalysis," JHEP **1108**, 022 (2011) [arXiv:1106.1330 [hep-th]].

24. J. Erdmenger and V. G. Filev, “Mesons from global Anti-de Sitter space,” JHEP **1101**, 119 (2011) [arXiv:1012.0496 [hep-th]].
25. V. G. Filev and R. C. Raskov, “Magnetic Catalysis of Chiral Symmetry Breaking. A Holographic Prospective,” Adv. High Energy Phys. **2010** (2010) 473206 [arXiv:1010.0444 [hep-th]].
26. V. G. Filev, “Hot Defect Superconformal Field Theory in an External Magnetic Field,” JHEP 0911:123,2009, arXiv:0910.0554 [hep-th].
27. V. G. Filev, C. V. Johnson and J. P. Shock, “Universal Holographic Chiral Dynamics in an External Magnetic Field,” JHEP 0908:013,2009, arXiv:0903.5345 [hep-th].
28. V. G. Filev and C. V. Johnson, “Universality in the Large N Dynamics of Flavour: Thermal Vs. Quantum Induced Phase Transitions,” JHEP 0810:058,2008, arXiv:0805.1950 [hep-th].
29. T. Albash, V. G. Filev, C. V. Johnson and A. Kundu, “Quarks in an External Electric Field in Finite Temperature Large N Gauge Theory,” JHEP08(2008)092, arXiv:0709.1554 [hep-th].
30. T. Albash, V. G. Filev, C. V. Johnson and A. Kundu, “Finite Temperature Large N Gauge Theory with Quarks in an External Magnetic Field,” JHEP07(2008)080, arXiv:0709.1547 [hep-th].
31. V. G. Filev, “Criticality, Scaling and Chiral Symmetry Breaking in External Magnetic Field,” JHEP04(2008)088, arXiv:0706.3811 [hep-th].
32. V. G. Filev, C. V. Johnson, R. C. Rashkov and K. S. Viswanathan, “Flavoured large N gauge theory in an external magnetic field,” JHEP10(2007)019, arXiv:hep-th/0701001.
33. T. Albash, V. G. Filev, C. V. Johnson and A. Kundu, “Global Currents, Phase Transitions, and Chiral Symmetry Breaking in Large  $N_c$  Gauge Theory,” JHEP 0812:033,2008, arXiv:hep-th/0605175.
34. T. Albash, V. G. Filev, C. V. Johnson and A. Kundu, “A topology-changing phase transition and the dynamics of flavour,” Phys.Rev.D77:066004,2008, arXiv:hep-th/0605088.
35. V. G. Filev and C. V. Johnson, “Operators with large quantum numbers, spinning strings, and giant gravitons,” Phys. Rev. D **71**, 106007 (2005) [arXiv:hep-th/0411023].
36. H. Dimov, V. G. Filev, R. C. Rashkov and K. S. Viswanathan, “Semiclassical quantization of rotating strings in Pilch-Warner geometry,” Phys. Rev. D **68**, 066010 (2003), [arXiv:hep-th/0304035].