EVDOKIYA (EVA) KOSTADINOVA

Curriculum Vitae

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| Phone: 254 710 1135  Email: [eva\_kostadinova@baylor.edu](mailto:eva_kostadinova@baylor.edu)  Website: <https://sites.baylor.edu/eva_kostadinova/> | | Office: 3105 04  Baylor Research & Innovation Collaborative  100 Research Pkwy, Waco, TX 76704, USA |
| **EDUCATION** | | |
| **Ph.D., Dec 2017**  **Department of Physics**  **Baylor University** | Dissertation: “Spectral Approach to Transport Problems in Two-Dimensional Disordered Lattices: Physical Interpretation and Applications” Advisor: Dr. T W Hyde; Collaborators: Dr. L S Matthews, Dr. C D Liaw | |
| **B.S., May 2014**  **Department of Physics**  **Furman University** | Thesis: “Sensors for Extraterrestrial Robot Land Navigation” Advisor: Dr. D A Moffett; Collaborators: Dr. J R Conrad | |
| **B.A., May 2014**  **Dep. of Political Science**  **Furman University** | Thesis: “Middle East and Islamic Studies Programs in the US in the Wake of the Arab Spring” Advisor: Dr. A K Yildirim; Minor: Middle East and Islamic Studies | |
| **WORK EXPERIENCE** | | |

* Assistant Research Professor at CASPER, Baylor University, Feb 2018 – present
* Graduate Research Assistant at CASPER, Baylor University, May 2016 – Dec 2017
* Graduate Teaching Assistant at Baylor University Physics Department, Sep 2014 –May 2016
* Lab Assistant and Physics Tutor at Furman University Physics Department, Sep 2012 – May 2014
* Library Assistant in Inter Library Loan Department, Furman University, Sep 2010 – May 2014

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| **GRANTS FUNDED** |

* [[1]](#footnote-1) **PI:** NSF/DOE Onset of Turbulence in Dusty Plasma Liquids, Aug 1, 2019 – July 31, 2022, $257,840
* **Co-PI:** NASA/JPL Dust charging and Transport in Simulated Lunar Swirl Environments, Dec 1, 2019 – Nov 30, 2020, $30, 000
* **Co-**PI: DOE-FES Hypervelocity impact in stellar media: heat shielding, formation of shock fronts and ablation clouds (allocated experimental time on DIII-D as part of the DOE 2020 Frontiers Experiments Program)

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| **RESEARCH EXPERIENCE** |

***Professional Research*:** Center for Astrophysics, Space Physics, and Engineering Research (CASPER), Baylor University, Feb 2018 – present

* Topics: turbulence and exotic transport behavior in disordered media, nonlocal interactions in strongly coupled systems, lunar dust mitigation and control, self-organization and stability of gravity and microgravity dusty plasmas, statistical mechanics and thermodynamics of driven-dissipative systems, dust particle techniques for plasma diagnostics, dusty plasma applications to fusion research

***Graduate Research*:** Department of Physics, Baylor University, Sep 2014-Dec 2017 (advisor: T W Hyde)

* Topics: Spectral approach to Anderson-type transport problems in two-dimensional infinite disordered systems (physical interpretation and application to quantum and classical systems); Long-range attractive forces in plasma crystals; Disorder-induced phase transitions in complex plasmas; Complex plasma graphene analogues;

***Undergraduate Research*****:**

* Madison Plasma Dynamo Experiment (MPDX), Department of Physics, University of Wisconsin (Madison), May-July 2013 (advisor: Dr. C. Forest, post-doctorate advisor: Dr. C. Cooper); Role: Designed, constructed and programmed a motion control system for robotic insertion of sweep probe used in plasma environment.
* Independent Study on Space Robotics, Department of Physics, Furman University, January-May 2013 (advisor: Dr. J. Conrad); Role: Studied types of sensors used in robot land navigation in extraterrestrial conditions.
* Hydration Status of Collagen as Revealed by Raman Spectroscopy, Department of Physics, Furman University, Jun-Aug 2011 (advisor: Dr. D. Wang); Role: Investigated the capability of Raman spectroscopy in revealing the physiochemical status of collagen through analysis of bovine material samples (Sigma-Aldrich)

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| **JOURNAL PUBLICATIONS AND BOOKS** *\*Undergraduate student authors* |

* **E G Kostadinova**, J L Padgett, C D Liaw, L S Matthews, & T W Hyde, (2020). Anomalous diffusion in semi-crystalline polymer structures. (submitted to *New Journal of Physics)* *arXiv preprint arXiv:2006.01068*.
* J L Padgett, **E G Kostadinova**, C D Liaw, K Busse, L SMatthews, & T W Hyde (2020). Anomalous diffusion in one-dimensional disordered systems: a discrete fractional Laplacian method. *Journal of Physics A: Mathematical and Theoretical*, *53*(13), 135205.
* L S Matthews, **E G Kostadinova**, D Sanford\*, TW Hyde, S Ashrafi, E Guay\* (2020), Dust charging in dynamic ion wakes, *Phys. Plasmas, 27,* 023703 ***(Featured & Scilight)***
* **E G Kostadinova**, C D Liaw, A S Hering, A Cameron\*, F Guyton\*, L S Matthews, & T W Hyde (2019). Spectral approach to transport in a two-dimensional honeycomb lattice with substitutional disorder. *Physical Review B, 99*, 024115
* P Hartmann, J C Reyes, **E G Kostadinova**, L S Matthews, T W Hyde, R U Masheyeva, K N Dzhumagulova, T S Ramazanov, T Ott, H Kählert, M Bonitz, I Korolov, & Z Donkó (2019). Self-diffusion in two-dimensional quasi-magnetized rotating dusty plasmas. *Physical Review E, 99*, 013203
* **E G Kostadinova**, F Guyton\*, A Cameron\*, K Busse\*, C D Liaw, L S Matthews, & T W Hyde (2018) Transport properties of disordered two‐dimensional complex plasma crystal, *Contrib. Plasma Phys*., 58 (2-3), 209–216.
* ***(book)* E G Kostadinova** (2018). Spectral Approach to Transport Problems in Two-Dimensional Disordered Lattices: Physical Interpretation and Applications. Springer
* **E G Kostadinova**, K Busse\*, N Ellis\*, J Padgett, C D Liaw, L S Matthews, & T W Hyde (2017). Delocalization in infinite disordered two-dimensional lattices of different geometry. *Physical Review B*, *96*(23), 235408.
* **E G Kostadinova**, C D Liaw, L S Matthews, & T W Hyde (2016). Physical interpretation of the spectral approach to delocalization in infinite disordered systems. *Materials Research Express*, *3*(12), 125904.

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| **[[2]](#footnote-2) WORK IN PROGRESS** *\*Undergraduate student authors* |

* J Carmona-Reyes, P Hartmann, T W Hyde, **E G Kostadinova**, M Lechuga, L S Matthews, M Rosenberg, (2020). Streaming instabilities in microgravity dusty plasma liquids, to be submitted to *Physics of Plasmas*
* **E G Kostadinova,** J L Padgett, C D Liaw, L S Matthews, T W Hyde, Transport beyond eigenvalues: A Fractional Laplacian Spectral Approach, to be submitted to *Nat. Phys.*
* **E G Kostadinova**, J L Padgett, Spectral Approach to Semi-Classical Turbulence, to be submitted to *Phys. Rev. B*

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| **CONFERENCE TALKS** |

* **E G Kostadinova**, J Padgett, C D Liaw, L S Matthews, & T W Hyde, “Spectral Approach to Particle Transport in Turbulent Dusty Plasma”, *APS DPP*, Ft. Lauderdale, FL, Oct 21-25, 2019
* **E G Kostadinova**, J Padgett, C D Liaw, P Hartmann, M Rosenberg, L S Matthews, & T W Hyde, “Plasma Kristall-4: Anomalous diffusion and vorticity in a multi-chain dusty plasma”, *IEEE PPPS*, Orlando, FL, June 23-28, 2019
* **E G Kostadinova**, J Padgett, K Busse, C D Liaw, L S Matthews, & T W Hyde, “Anomalous diffusion in microgravity complex plasma cloud”, *APS DPP*, Portland, OR, Nov 5-9, 2018
* **E G Kostadinova**, J Padgett, K Busse, C D Liaw, L S Matthews, & T W Hyde, “Anomalous diffusion in 1D dusty plasma structures: A fractional Laplacian model for strong correlations”, *15th Dusty Plasma Workshop*, Baltimore, MD, May 29-June 1, 2018
* **E G Kostadinova**, C D Liaw, L S Matthews, & T W Hyde, “Lattice wave transport in a 2D complex plasma graphene analogue”, *APS DPP*, Milwaukee, WI, Oct 23-27, 2017
* **E G Kostadinova**, C D Liaw, L S Matthews, & T W Hyde, “Transport properties of disordered 2D complex plasma crystal”, *SCCS*, Kiel, Germany, Jul 30-Aug 4, 2017
* **E G Kostadinova**, C D Liaw, L S Matthews, & T W Hyde, “Spectral Approach to Anderson Localization n 2D Complex Plasma Crystal”, *APS DPP*, San Jose, CA, Oct 31-Nov 4, 2016

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| **POSTER PRESENTATIONS** |

* **E G Kostadinova**, M Lechuga, L S Matthews, & T W Hyde, “Ion-dust streaming instability in microgravity dusty plasma”, *APS DPP*, Ft. Lauderdale, FL, Oct 21-25, 2019
* **E G Kostadinova**, K Busse, L S Matthews, & T W Hyde, “Dust chain formation in microgravity complex plasma”, *APS DPP*, Portland, OR, Nov 5-9, 2018
* **E G Kostadinova**, K Busse, C D Liaw, L S Matthews, & T W Hyde, “Nematic transition in microgravity complex plasma liquid crystals”, *15th Dusty Plasma Workshop*, Baltimore, MD, May 29-June 1, 2018
* **E G Kostadinova**, B Mayberry, V Strait, W Smith, “Conservation of Momentum: Parallel Plate Capacitor Experiment”, *Fall Joint Zone Meeting of the AAPT and the SPS,* Furman, Greenville, SC, Oct 2013
* **E G Kostadinova**, A Sheppard, “Women in Physics: Lise Meitner”, *Southeast Conference for Undergraduate Women in Physics*, University of Tennessee, Knoxville, TN, Jan 2012

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| **PUBLIC SERVICE AND OUTREACH** |

* Associate editor supporting astrophysics for *Heliyon Physics*, May 2020-present
* Member of the APS DPP Executive Nominating Committee, 2020
* Lecturer for 2020 Introduction to Fusion Energy and Plasma Physics Course, as part of the Princeton Plasma Physics Lab Science Undergraduate Laboratory Internship (SULI) program
* Member of the Plasma Science Expo organization committee for APS DPP 2020
* Member of the APS DPP Public Information Committee for 2019 & 2020
* Member of APS DPP CPP cross-cutting group on workforce development, 2019-present
* Referee for CRC Press, Journal of Plasma Physics, IEEE Transactions on Plasma Science;
* Educator Present Your PhD initiative, presenting novel scientific work to students from 1st to 12th grade;
* Physics mentor for CODE RED, Baylor academic event for High Ability High School Students
* Lecturer for Baylor University’s physics department graduate and undergraduate colloquium, CASPER seminar, and Women in STEM speaker series, Baylor Physics Bowl (High School science competition)
* Workshop coordinator for APS DPP Conference, San Jose, CA, Oct 31-Nov 4, 2016
* Department Representative in Baylor Graduate Students Association, Sep 2014-May 2017
* Graduate School Mentor in Baylor Mentor-Mentee Program, Sep 2015-Dec 2017

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| **HONORS AND AWARDS** |

* Outstanding dissertation award, Department of Physics, Baylor University, 2017
* Baylor University Graduate School Fellowship, Aug 2014-Dec 2017
* Second place on Atmel Corporation National Robotics Competition at World Maker Faire, New York Hall of Science, Queens, NY, September 2012
* National Scholar Award from the National Society of High School Scholars, May 2011
* Dean’s List – for students with GPA in the top 25% of their class, 2013, 2012, 2011, 2010

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| **SCIENTIFIC ORGANIZATIONS AND SOCIETIES** |

* US Burning Plasma Organization, Jan 2020-present
* IEEE, July 2019-Present
* American Association of Physics Teachers, Sep 2014-Present
* American Astronomical Society, Sep 2013-Present
* American Physical Society (APS), Division of Plasma Physics, Sep 2012-Present
* Society of Physics Students (SPS), Sep 2010-2014
* Association for Women in Mathematics, Sep 2016-Present
* National Society of High School Scholars (NSHSS), Honorable Member, May 2010-Present
* Sigma Pi Sigma Physics Honor Society, Honorable Member, Apr 2013-Present
* Pi Sigma Alpha Honor Society, Honorable Member, Jan 2014-Present

1. Progress related to this grant can be found in the following website: <http://myweb.ttu.edu/jopadget/grant.html> [↑](#footnote-ref-1)
2. Updated status on these papers can be found on my website: <https://sites.baylor.edu/eva_kostadinova/> [↑](#footnote-ref-2)