CURRICULUM VITAE
Vadim Zipunnikov

Part I

PERSONAL DATA

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working group web-page: http://www.smart-stats.org

EDUCATION AND TRAINING

Degrees

○ PhD, Cornell University, Ithaca, NY, Statistics (2009).

○ MS, Cornell University, Ithaca, NY, Statistics (2006).

○ MA, New Economic School, Moscow, Russia, Economics (2003).

○ Diploma (MS), Moscow State University, Moscow, Russia, Mathematics (2001).

Postdoctoral Training

○ Department of Biostatistics, Johns Hopkins University, Baltimore, MD (2009 – 2012).

PROFESSIONAL EXPERIENCE

○ Associate Professor, Department of Biostatistics, Johns Hopkins University (2018 – present).

○ Assistant Professor, Department of Biostatistics, Johns Hopkins University (2012 – present).

○ Associate Faculty, Johns Hopkins Center on Aging and Health (2016 – present).

○ Statistical Consultant, National Institute of Mental Health (2015 – present).

○ Postdoctoral Fellow, Department of Biostatistics, Johns Hopkins University (2009 – 2012).

PROFESSIONAL ACTIVITIES

Professional Memberships

○ American Statistical Association (Biometrics, Statistics in Imaging, Statistical Computing).

○ Gerontological Society of America (Measurement, Statistics, Research and Design).

○ Society for Research in Biological Rhythms.

○ International Biometric Society (ENAR).

Participation on Advisory Panels and Committees

○ American Statistical Association's Nonparametric Statistics Section, student paper award committee (2014).

Program Development

○ Student organizing committee of conference, Statistical Methods for Very Large Data Sets, (2011).

○ Chair of invited/topic-contributed sessions at

- Eastern North Atlantic Region (ENAR) Meeting (2011, 2012, 2013).
- Joint Statistical Meetings (JSM) (2012, 2013).

○ Organizer and co-organizer of topic-contributed/invited sessions

- Multiway World: Modern Data Analysis with Tensor Decompositions, JSM (2012).
- Next Generation Matrix Decompositions: Methods and Applications, JSM (2012).
- Statistical Body Language: Analytical Methods for Wearable Computing, ENAR (2013).
- Making sense of sensors: Statistical Methods for Wearable Computing, ENAR (2014).
- Predictive modeling of accelerometry, electronic diaries, and passively recorded voice data, ENAR (2018).
- Monitoring Health Behaviours with multi-sensor mobile technology, ENAR (2019), JSM (2019).

- Co-organizer of workshops and education courses

  - Assessing Daily Activity in Old Age: Unraveling the Complexity of Monitors, Measures, and Methods, Gerontological Society of American (GSA) Meeting (2014).
  - Functional Data Analysis for Wearables: Methods and Applications, International Conference on Ambulatory Monitoring of Physical Activity (ICAMPAM) (2017).
  - Advanced Data Analysis workshop & Data Challenge, ISPAH (2018).
  - Functional Data Analysis for Wearables: Methods and Applications, JSM (2019).

- Organizer and lead of roundtable

  - Making sense of sensors, ASA Biopharma FDA-Industry Statistics Workshop, (2015).

EDITORIAL ACTIVITIES

Peer Review Activities

- Journal of the American Statistical Association (ACS, TM) (3,4)
- Biometrics (6)
- Journal of Computational and Graphical Statistics (3)
- Annals of Applied Statistics (3)
- Biostatistics (2)
- Journal of the Royal Statistical Society (C) (1)
- Technometrics (1)
- Statistical Analysis and Data Mining (1)
- Computational Statistics and Data Analysis (1)
- Statistical Modelling (2)
- Neuroimage (3)
- Frontiers in Systems Neuroscience (1)
- Circulation (1)
- PLoS One (7)
- Biometrical Journal (1)
- Computational Statistics (Springer) (1)
- Computational Statistics (WIREs) (1)
- Journal of Statistical Software (2)
- Statistics in Medicine (4)
- Statistical Methods in Medical Research (1)
- IEEE Signal Processing Letters (2)

- BMC Public Health (1)
- Advances in Data Analysis and Classification (2)
- Scandinavian Journal of Statistics (1)
- The American Journal of Physical Medicine and Rehabilitation (1)
- Journal of Gerontology: Medical Sciences (1)
- Oxford University Press, book proposal reviewer (1)

Ad-hoc Review of Proposals

- Cognitive Neuroscience Program, National Scientific Foundation (2013).
- Congressionally Directed Medical Research Programs (2014).
- Pepper Center, Johns Hopkins University (2015).
- Foundation ARSEP - French Multiple Sclerosis Research Society (2016).
- inHealth, Johns Hopkins University (2016).
- School of Emerging Technology, Towson University (2016).
- Alzheimer's Disease Research Center, Johns Hopkins University (2016).
- Provost's Undergraduate Research Award, Johns Hopkins University (2017).
- National Institute of Diabetes and Digestive and Kidney Diseases (2019).
- Netherlands Organisation for Health Research and Development (2019).

HONORS AND AWARDS

- Moscow Mayor Fellowship for Excellence in Studies, Moscow State University (2000).
- Outstanding Graduate Teaching Assistant, Department of BSCB, Cornell University (2005).
- Invited Paper in "Highlights of JCGS" Session at JSM (2012).
- IDIES Seed Funding Award, Johns Hopkins Univesity (2015).
- Catalyst Award, Johns Hopkins Univesity (2017).

PUBLICATIONS

† *indicates equal contribution*
‡ *indicates graduate student or postdoctoral fellow under supervision*

Published Peer-Reviewed Articles (h-index 19)

2012 and Earlier

1 **Zipunnikov V.**, Booth J.S., and Yoshida R. (2009), Counting tables using the double saddlepoint approximation.
   Journal of Computational and Graphical Statistics, 18(4), pp. 915-929.

2 **Zipunnikov V.**, Caffo B.S., Yousem D.M, Davatzikos C., Schwartz B.S., Crainiceanu C. (2011), Multilevel Functional Principal Component Analysis for High-Dimensional Data .
   Journal of Computational and Graphical Statistics, 20(4), pp. 852-873.[*Article selected as "Highlights of JCGS" at JSM 2012*]

3 **Zipunnikov V.**, Caffo B.S., Yousem D.M, Davatzikos C., Schwartz B.S., Crainiceanu C. (2011), Functional principal component model for high-dimensional brain imaging.
   NeuroImage, 58(3), pp. 772-784

4 Crainiceanu C.M., Caffo B.S., Luo S., **Zipunnikov V.**, Punjabi N.M. (2011) Population value decomposition, a framework for the analysis of images (),
   Journal of the American Statistical Association (ACS), 106, (495), pp. 775-790. [*Article appeared with discussion and rejoinder; selected for "JASA: invited paper" session at JSM 2011*]

2013

5 Shou, H., Eloyan A., Lee S., **Zipunnikov, V.**, Crainiceanu, A., Nebel M., Caffo, B., Lindquist, M., Crainiceanu, C. (2013) The image intra class correlation coefficient for replication studies.
   Cognitive, Affective, and Behavioral Neuroscience, 13(4), pp. 714-724

6 Khurram, I., DeWire, J., Mager., M., Maqbool, F., Zimmerman, S., **Zipunnikov, V.**, Marine, J., Spragg, D., Berger, R., Ashikaga, H., Nazarian, S., and Calkins, H. (2013) Relationship between left atrial appendage morphology and stroke in patients with atrial fibrilation
   Heart Rhythm, 10(12), pp. 1843-1849

7 Sasaki, T., Miller, C., Hansford, R., **Zipunnikov, V.**, Zviman, M., Marine, J., Spragg, D., Cheng, A., Tandri, H., Sinha, S., Kolandaivelu, A., Zimmerman, S., Bluemke, D., Tomaselli, G., Berger, R., Halperin, H., Calkins, H., and Nazarian, S. (2013) Impacts of Nonischemic Scar Features on Local Ventricular Electrograms and Scar-Related Ventricular Tachycardia Circuits in Patients with Nonischemic Cardiomyopathy
   Circulation: Arrhythmia and Electrophysiology, 6(6), pp. 1139-1147

8 Lee S., **Zipunnikov V.**, Shiee, N., Crainiceanu, C., Caffo B., Pham D., (2013) Clustering of High-dimensional Longitudinal Data (oral presentation)
   PRNI 2013: International Workshop on Pattern Recognition in NeuroImaging, pp. 33-36. [*Article awarded 2013 ENAR Poster Presentation Award*]

2014

9   Mints, Y. **Zipunnikov, V.**, Khurram I., Calkins H., Nazarian, S. (2014) Single Nucleotide Polymorphisms in Proximity to K-channel genes are associated with decreased longitudinal QTc variance
    Annals of Noninvasive Electrocardiology, 19 (1), pp. 63-69

10 Bai, J., He, B., Shou, H., **Zipunnikov, V.**, Glass, T., Crainiceanu, C., (2014) Normalization and extraction of interpretable metrics from raw accelerometry data
    Biostatistics, 15(1), pp. 102-116

11 Khurram, I., Beinart, R. **Zipunnikov, V.**, DeWire, J., Yarmohammadi, H., Sasaki, T., D. Spragg, D., Marine, J., Berger, R., Halperin, H., Calkins, H., Zimmerman, S., Nazarian, S. (2014) Validation of Image Intensity Ratio, A Normalized Magnetic Resonance-Based Measure to Enable Inter-Patient and Longitudinal Intra-Patient Comparability of Left Atrial Fibrosis
    Heart Rhythm, 11(1), pp. 85-92

12 Schrack, J., **Zipunnikov, V.**, Goldsmith J., Bai, J., Simonick, E., Crainiceanu C., Ferrucci, L. (2014) Assessing the "Physical cliff": Detailed Quantification of Aging and Physical Activity
    Journal of Gerontology: Medical Sciences, 69, pp. 973-979. *[Article selected as "Editor's Choice"]*

13 He, B., Bai, J., **Zipunnikov V.**, Koster, A., Paolo, C., Glynn, N., Harris, T., Crainiceanu, C. (2014) Predicting human movement type based on multiple accelerometers using movelets
    Medicine and Science in Sports and Exercise, 46(9), pp. 1859-1866

14 Ling, Z., Liu, Z., Su, L, **Zipunnikov, V.**, Wu, J., Du, H., Woo, K., Chen, S., Zhong, B., Lan, X., Fan, J., Xu, Y., Chen, W., Yin, Y., Nazarian, S., Zrenner, B. (2014) Radiofrequency Ablation vs. Antiarrhythmic Medication for Treatment of Ventricular Premature Beats from the Right Ventricular Outflow Tract: a Prospective Randomized Study
    Circulation: Arrhythmia and Electrophysiology, 7(2), pp. 237-43

15 Schrack J., **Zipunnikov, V.**, Goldsmith J., Bandeen-Roche K., Crainiceanu C., Ferrucci L. (2014) Estimating Energy Expenditure from Heart Rate in Older Adults: a Case for Calibration
    PLoS One, April 30, 9(4), e93520

16 Dewire, J., Khurram, I., Pashakhanloo, F., Spragg, D., Marine, J., Berger, R., Ashikaga, H., Rickard, J., Zimmerman, S., **Zipunnikov, V.,** Calkins, H. and Nazarian, S. (2014) The Association of Pre-Existing Left Atrial Fibrosis with Clinical Variables in Patients Referred for Catheter Ablation of Atrial Fibrillation
    Clinical Medicine Insights. Cardiology, 8 (S1), pp. 25-30

17 **Zipunnikov, V.**, Greven S, Shou, H., Caffo B.S., Reich D., Crainiceanu C., Longitudinal High-Dimensional Principal Components Analysis with Application to Diffusion Tensor Imaging of Multiple Sclerosis
    Annals of Applied Statistics , 8(4), pp.2175-2202

2015

18 Shou‡, H., **Zipunnikov, V.**, Crainiceanu C., Greven, S. (2015) Structured Functional Principal Component Analysis
    Biometrics, 71 (1), pp. 247-757

19 Xiao, L., Huang, L., Schrack, J., Ferrucci, L., **Zipunnikov, V.**, Crainiceanu, C., (2015) Quantifying the life-time circadian rhythm of physical activity: a covariate-dependent functional approach
<u>Biostatistics</u>, 16.2 (2015), pp. 352-367

20 Goldsmith, J., **Zipunnikov, V**, Schrack, J., Generalized Multilevel Function-on-Scalar Regression and Principal Component Analysis
<u>Biometrics</u>, 71 (2), pp. 344-353

21 Schrack, J., **Zipunnikov, V.**, Crainiceanu, C. (2015) Electronic devices and applications to track physical activity
<u>Journal of the American Medical Association</u>, 20(2015), pp. 2079-2080

22 Lee[‡], S., **Zipunnikov V.**, D. Reich, Pham, D. (2015) Statistical Image Analysis of Longitudinal RAVENS Images: Methodology and Case Study
<u>Frontiers in Neuroscience: Brain Imaging Methods</u>, 9 (2015)

23 Steeves, J., Murphy, R., Crainiceanu, C., **Zipunnikov, V.**, Van Domelen, D., Harris, T., (2015) Daily Patterns of Physical Activity by Type 2 Diabetes Definition: Comparing Diabetes, Prediabetes, and Participants with Normal Glucose Levels in NHANES 2003-2006
<u>Preventive Medicine Reports</u>, 2 (2015), pp. 152-157

24 Steeves, J., Murphy, R., **Zipunnikov, V.**, Strath, S., Harris, T., (2015) Women workers and women at home are equally inactive: NHANES 2003-2006
<u>Medicine and Science in Sports and Exercise</u>, 47(8), pp. 1635-1642

25 Sasaki, T., Calkins, H., Miller, C., Zviman, M., **Zipunnikov, V.**, Arai, T., Sawabe, M., Marine, J., Berger, R., Nazarian, S., and Zimmerman, S. (2015)New Insight into Scar-related Ventricular Tachycardia Circuits in Ischemic Cardiomyopathy: Fat Deposition after Myocardial Infarction on Computed Tomography
<u>Heart Rhythm</u>, 12 (7), pp. 1508-1518

26 Ling, Z., McManigle, J., **Zipunnikov, V.** Pashakhanloo, F., Khurram, I., Zimmerman, S., Philips, B., Marine, J., Spragg, D., Ashikaga, H., Calkins, H., Nazarian, S. The association of left atrial low voltage regions on electroanatomic mapping with low attenuation regions on cardiac computed tomography perfusion imaging in patients with atrial fibrillation
<u>Heart Rhythm</u>, 12 (5), pp. 857-864

27 Catanzaro, J., Khurram, I., Zimmerman, S., **Zipunnikov, V.**, Beinart, R., Philips, B., Yong Ji, S., Berger, R., DeWire, J., Marine, J., Spragg, D., Ashikaga, H., Halperin, H., Calkins, H., and Nazarian, S., (2015) MRI Evaluation of Radiofrequency, Cryothermal, and Laser left atrial lesion formation in patients with atrial fibrillation
<u>Pacing: Clinical Electrophysiology</u>, 38(11), pp. 1317-1324

28 Fukumoto, K., Habibi, M., Khurram, I., Zimmerman, S., **Zipunnikov, V.**, Spragg, D., Ashikaga, H., Rickard, J., Marine, J., Berger, R., Calkins, H., Nazarian, S. Comparison of Pre-Existing Versus Ablation-Induced Atrial Scar on Magnetic Resonance Imaging
<u>Heart Rhythm</u>, 12 (4), pp. 668-672

29 Mints, Y., Yarmohammadi, H., Khurram, I., Hoyt, H., Hansford, R., Zimmerman, S., Steinberg, S., Judge, S., Tomaselli, G., Calkins, H., **Zipunnikov, V.**, Nazarian, S., (2015) Association of Common Variations on Chromosome 4q25 and Left Atrial Volume in Patients with Atrial Fibrillation
<u>Clinical Medicine Insights. Cardiology</u>, 9 (2015), pp.39-41

2016

30 Fisher‡, A., Caffo, B., Scwartz, B., **Zipunnikov, V.**, (2016) Fast bootstrap for PCA when p greater than million
Journal of the American Statistical Association (TM) 111(514), pp. 846-860

31 Yue‡, C., **Zipunnikov, V.**, Bazin, P-L., Pham, D., Reich, D., Crainiceanu, C., Caffo, B. (2016) Parametrization of white matter manifold-like structures using principal surfaces
Journal of the American Statistical Association (ACS), 111(515), pp.1050-1060

32 Xiao, L., **Zipunnikov, V.**, Ruppert D., Crainiceanu C. (2016) Fast Covariance Estimation for High-Dimensional Functional Data
Statistics and Computing, 26(1), pp. 409-421

33 Schrack, J., **Zipunnikov V.**, Simonsick, E., Ferrucci, L., Studenski, S., (2016) Rising Energetic Cost of Walking Predicts Gait Speed Decline With Aging
Journal of Gerontology: Medical Sciences, 71(7), pp.947-953.

34 Fishman, E., Steeves, J., **Zipunnikov, V.**, Koster, A., Berrigan, D., Harris, T., Murphy, R., (2016) Association between Objectively Measured Physical Activity and Mortality in NHANES
Medicine and Science in Sports and Exercise, 48(7), pp. 1303-1311

35 Ipek, E., Marine. J., Habibi, M., Chrispin, J., Lima, J., Rickard, J., Spragg, D., Zimmerman, S., **Zipunnikov, V.**, Berger, D., Calkins, H., Nazarian, S., (2016) Association of Left Atrial Function with Incident Atypical Atrial Flutter Following Atrial Fibrillation Ablation
Heart Rhythm, 13 (2), pp. 391-398

36 Khurram, I., Habibi, M., Ipek, E., Chrispin, J., Yang, E., Fukumoto, K., Jane Dewire, J., Spragg, D., Marine, J., Berger, R., Ashikaga, H., Rickard, J., Zhang, Y., **Zipunnikov, V.**, Zimmerman, S., Calkins, H., Nazarian, S., Association of Left Atrial Late Gadolinium Enhancement with Arrhythmia Recurrence Following Pulmonary Vein Isolation for Paroxysmal and Persistent Atrial Fibrillation
Journal of the American College of Cardiology: Cardiovascular Imaging, 9 (2), pp. 142-148

37 Wennberg, A., Spira, A., Pettigrew, C., Soldan, A., **Zipunnikov, V.**, Rebook, G., Roses, A., MD, Lutz, M., Miller, M., Thambisetty, M., Albert, M., (2016) Blood glucose levels and cortical thinning in cognitively normal middle-aged adults
Journal of the Neurological Sciences, 365, pp. 89-95

38 Habibi, M., Lima, J., Khurram, I., Zimmerman, S., **Zipunnikov, V.**, Fukumoto, K., Spragg, D., Ashikaga, H., Rickard, J., Calkins, H., Nazarian, S.Association of Left Atrial Function and Left Atrial Enhancement in Patients with Atrial Fibrillation: Cardiac Magnetic Resonance Study
Circulation: Cardiovascular Imaging, 8(2), e002769

39 Khurram, I., Maqbool, M., Berger, R., Marine, J., Spragg, D., Ashikaga, H., **Zipunnikov, V.**, Kass, D., Calkins, H., Nazarian, S., Zimmerman, S., Association between left atrial stiffness index and atrial fibrillation recurrence in patients undergoing left atrial ablation
Circulation: Arrhythmia and Electrophysiology, 9(3), p.e003163

40 Zghaib, T., Ipek, E., Zahid, S., Balouch, M., Misra, S., Ashikaga, H., Berger, R., Marine, J., Spragg, D., Zimmerman, S., **Zipunnikov, V.,** Trayanova, N., Calkins, H., Nazarian, S.,

Association of left atrial epicardial adipose tissue with electrogram bipolar voltage and fractionation: Electrophysiologic substrates for atrial fibrillation.
Heart Rhythm, 13(12), pp. 2333-2339

41 Habibi, M., Lima, J., Zimmerman, S., **Zipunnikov, V.**, Ipek, E., Spragg, D., Ashikaga, H., Rickard, J., Marine, J., Berger, R., Calkins, H., Nazarian, S. (2016) The Association of Baseline Left Atrial Function on Cardiac Magnetic Resonance and Pulmonary Vein Isolation Outcome in Patients with Drug Refractory Atrial Fibrillation
Heart Rhythm, 13(5), pp. 1037-1044

42 Fukumoto, K., Habibi, M., Ipek, E., Zahid, S., Khurram, I., Zimmerman, S., **Zipunnikov, V.**, Spragg, D., Ashikaga, H., Trayanova, N., Tomaselli, G., Rickard, J., Marine, J., Berger, R., Calkins, H., Nazarian, S. (2016) Association of Left Atrial Local Conduction Velocity With Late Gadolinium Enhancement on Cardiac Magnetic Resonance in Patients With Atrial Fibrillation
Circulation: Arrhythmia and Electrophysiology, 9, e002897

43 Ipek, E., Fukumoto, K., Zahid, S. Prakosa, A., Chrispin, J., Habibi, M., Pashakhanloo, F., Rickard, J., Spragg, D., Trayanova, N., Zimmerman, S., **Zipunnikov, V.**, Marine, J., Calkins, H., Nazarian, N., (2016) Association of Left Atrial Late Gadolinium Enhancement with Regional Electrogram Fractionation during Sinus Rhythm
Journal of Cardiovascular Electrophysiology, 27(5), pp. 632-633

2017

44 Urbanek‡, J., Harezlak, J., Glynn, N., Harris, T., Crainiceanu, C., **Zipunnikov, V.**, (2017) Stride-variability measures derived from wrist and hip worn accelerometers
Gait & Posture, 52, pp.217-223.

45 Huang, L., Reiss, P., Xiao, L., **Zipunnikov, V.**, Lindquist, M. and Crainiceanu, C., (2017) Separable spatial-temporal principal component analysis
Biostatistics, 18 (2), pp. 214-229

46 Wennberg, A., Gottesman, R., Hagen, C., **Zipunnikov, V.**, Kauffmann, C., Albert, M., Rebok, G., Kasper, J., Spira, A., (2017) Longitudinal Association Between Diabetes and Cognitive Decline: The National Health and Aging Trends Study
Archives of Gerontology and Geriatrics, 72, pp. 39-44

47 Varma†, V., Day, D., Leroux, A., Di, J., Urbanek, J., Xiao, L., **Zipunnikov†, V.**, (2017) Re-evaluating the effect of age on physical activity over the lifespan
Preventive Medicine, 101, pp. 102-108. *[JHSPH press release, Article featured at TIME, Washington Post, Wall Street Journal, WebMD Magazine, Yahoo News, BBC radio, WPYR and others]*

48 Schmidt, A., Bosse, M., Frey, K, O'Toole, R, Stinner, D, Westberg, G, Scharfstein, D., **Zipunnikov, V.** MacKenzie, E., and METRC, Predicting Acute Compartment Syndrome (PACS): The Role of Continuous Monitoring
Journal of Orthopedic Trauma (S), 31, pp. S40-S47

49 Mikkelsen, M., Banker, P., 24-cites co-authors, **Zipunnikov, V.**, Zolner, H., Edden, R., (2017) Big GABA: Edited MR Spectroscopy at 24 Research Sites
NeuroImage, 159, pp.32-45.

50 Shou, H., Cui, L., Lameira, D., Femke, L., Crainiceanu, C., **Zipunnikov, V.**, Merikangas, K., (2017) Dysregulation of objectively assessed 24-hour motor activity patterns as a potential marker for bipolar I disorder: results of a community-based family study
Translational Psychiatry, 7(8), p.e1211.

2018

51 Urbanek‡, J., Spira, A., Di, J., Leroux, A., Crainiceanu, C., **Zipunnikov, V.**, (2018) Epidemiology of Objectively Measured Bedtime and Chronotype in the US adolescents and adults: NHANES 2003-2006
Chronobiology International, 35(3), pp. 416-434 *[Best poster presentation at 3rd Annual JHU Sleep and Circadian Day, 2017]*

52 Varma†, V., Day, D., Leroux, A., Di, J., Urbanek, J., Xiao, L., **Zipunnikov†, V.**, (2018) Total volume of physical activity: TAC, TLAC, or TAC(λ)
Preventive Medicine, 106, pp. 233-235

53 Urbanek, J., **Zipunnikov, V.**, Harris, T., Fadel, W., Glynn, N., Crainiceanu, C., Harezlak, J., (2018) Prediction of sustained harmonic walking in the free-living environment using raw accelerometry data
Physiological Measurement, 39(2) *[Best poster presentation award at ENAR 2015]*

54 Urbanek, J., **Zipunnikov**, Harris, T., Crainiceanu, C., Harezlak, J., Glynn, N., (2018) Validation of gait characteristics extracted from raw accelerometry during walking against measures of physical function, mobility, fatigability, and fitness
Journal of Gerontology: Medical Sciences, 73(5), pp.676-681 *[Best postdoctoral poster presentation at 9th Annual Research on Aging Showcase; Article appeared with an Invited Commentary]*

55 Nastasi, A., Ahuja, A., **Zipunnikov, V.**, Simonsick, E., Studenski, S., Ferrucci, L., Schrack, J., (2018) Objectively Measured Physical Activity and Falls in Well-Functioning Older Adults: Findings from the Baltimore Longitudinal Study of Aging
American Journal of Physical and Medical Rehabilitation, 97(4), pp.255-260

56 Wanigatunga, A., Simonsick, E., **Zipunnikov, V.**, Spira, A., Studenski, S., Ferrucci, L, Schrack, J., (2018) Perceived fatigability and objective physical activity in mid-to-late-life
Journal of Gerontology: Medical Sciences, 73(5), pp. 630-635 *[Article appeared with an Invited Commentary]*

57 Gresham, G., Dy, S., **Zipunnikov, V.**, Browner, I., Simonsick, E., Studentski, S., Ferrucci, L., Schrack, J., (2018) Fatigability and Endurance Performance in Adults with a History of Cancer: Analyses from the Baltimore Longitudinal Study of Aging
Cancer, 124(6), pp. 1279-1287 *[Article appeared with an Editorial]*

58 Schrack, J., Leroux, A., Fleg, J., **Zipunnikov, V.**, Simonsick, E., Studenski, S., Crainiceanu, C., Ferrucci, L. (2018) Using Heart Rate to Define Objectively Measured Physical Activity Intensity: One Size Does Not Fit All
Journal of Gerontology: Medical Sciences, 73(5), pp.668-675 *[Article appeared with an Invited Commentary]*

59 Grigsby, M., Di, J., Leroux, A., **Zipunnikov, V.**, Xiao, L., Crainiceanu, C., Checkley, W., (2018) Novel Measures for Growth Model Selection
Emerging Themes in Epidemiology, 15(1), p.4

In Press

60 Huang[‡], L., Bai, J., Ivanescu, A., Harris, T., Maurer, M., Green, P., **Zipunnikov, V.** Multilevel matrix-variate analysis and its application to long-term monitoring of physical activity in clinical populations
Journal of the American Statistical Association (ACS) (in press)

61 Schmidt, A., Bosse, M., Frey, K, Di, J., O'Toole, R, Stinner, D, Westberg, G, Scharfstein, D., **Zipunnikov, V,** MacKenzie, E., and METRC, Is continuous near-infrared spectroscopy a reliable method to monitor development of acute compartment syndrome in patients with lower leg injuries
The Journal of Bone and Joint Surgery (in press)

62 Lamers, F., Swendsen, J., Cui, L., Husky, M., Johns, J., **Zipunnikov, V.**, Merikangas, K., Mood Variability and Reactivity in Mood Disorder Subtypes
Journal of Abnormal Psychology (in press)

63 Merikangas[†], K., Swendsen, J., Hickie, I., Cui, L., Shou, H., Merikangas, A., Zhang, J., Lamers, F., Crainiceanu, C., Volkow, N., **Zipunnikov**[†]**, V.**, Tracking Inter-relationships of Motor Activity, Sleep, Mood, and Energy via Mobile Technologies: Evidence for Cross-Domain Dysregulation in Bipolar I Disorder
Journal of the American Medical Association: Psychiatry (in press)

64 Wrobel, J., **Zipunnikov, V.**, Schrack, J., Goldsmith, J., Registration for Exponential Family Functional data
Biometrics (in press)

65 Wanigatunga, A., Gresham, G., Kuo, P., Martinez-Amezcua, P., **Zipunnikov, V.**, Dy, S., Simonsick, E., Ferrucci, F., Schrack, J.,Contrasting characteristics of daily physical activity among older adults by cancer history
Cancer (in press)

66 Johns, J., Crainiceanu, C., **Zipunnikov, V.**, Gellar, J., Variable-Domain Functional Principal Component Analysis
Journal of Computational and Graphical Statistics (in press)

67 Johns[‡], J., Di, J., Cui, L., Swendsen, J., Merikangas, K., **Zipunnikov, V.**, Fragmentation as a novel measure of stability of normalized trajectories of mood and attention measured by Ecological Momentary Assessment
Psychological Assessment (in press)

68 Karas, M., Bai, J., Straczkiewicz, M., Harezlak, J., Glynn, N., Harris, T., **Zipunnikov**, V., Crainiceanu, C., Urbanek, J., Accelerometry data in health research: challenges and opportunities
Statistics in Biosciences: Medical Device Data (in press)

69 Schrack, J., Kuo, P., Wanigatunga, A., Di, J., Simonsick, E., Studentski, S., Spira, A., Ferrucci, L., **Zipunnikov, V.**, Active-to-Sedentary Behavior Transitions, Fatigability, and Physical

Functioning in Older Adults
Journal of Gerontology: Medical Sciences (in press)

70 Leroux, A., Di, J., Smirnova, E., Mcguffey, E., Cao, Q., Bayatmokhtari, E., Tabacu, L., **Zipunnikov, V.**, Urbanek, J., Crainiceanu, C. Organizing and analyzing the activity data in NHANES
Statistics in Biosciences: Medical Device Data (in press)

71 Di‡, J., Spira, A., Bai, J., Urbanek, J., Leroux, A., Wu, M., Resnick, S., Simonsick, E., Ferrucci, L., Schrack, J., **Zipunnikov, V.**, Joint and Individual Representation of Domains of Physical Activity, Sleep, and Circadian Rhythmicity
Statistics in Biosciences: Medical Device Data (in press)

Under Review

72 **Zipunnikov, V.**, Dey, D., Leroux, A., Di, J., Urbanek, J., Schrack, J., Crainiceanu, C., Total volume of physical activity and its distribution over the day are associated with mortality in NHANES 2003-2006
Plos One (resubmitted)

73 Di‡, J., Leroux, A., Urbanek, J., Varadhan, R., Spira, A., Schrack, J., **Zipunnikov, V.** Patterns of Sedentary and Active Time Accumulation Are Associated with Mortality in US adults: The NHANES Study
British Journal of Sports Medicine (submitted)

74 Schmidt, A., Di, J., **Zipunnikov, V.**, Frey, K, Scharfstein, D., O'Toole, R., Bosse, M., Obremskey, W., Stinner, D., Hayda, R., Karunakar, M., Hak, D., Carroll, E., Collins, S., MacKenzie, E., and METRC. Is perfusion pressure a reliable indicator of the need for fasciotomy?
The Journal of Bone and Joint Surgery (resubmitted)

75 Straczkiewicz, M., Harris, T., Glynn, N., **Zipunnikov, V.**, Harezlak, J., Fast and robust algorithm for detecting body posture using wrist-worn accelerometers
Gait and Posture (submitted)

In Preparation

76 Yue‡, C., Xu, Y., Chen, S., Goldsmith, J., Lindquist, M., Caffo, B., **Zipunnikov, V.** Multilevel Binary Principal Component Analysis with applications to NHANES and Human Connectome Project

77 Di‡,J., Leroux, A., **Zipunnikov, V.**, Capturing enhanced information with higher-order tensorian statisics and application to accelerometry data

78 **Zipunnikov, V.**, Li, X., Zhu, D., Yu, D., Harris, T., Maurer, M., Green, P., A real-time accelerometry-derived score to monitor pre- and post-hospitalization periods in congestive heart failure

79 **Zipunnikov, V.**, Dey, D., Gaynanova, I. Network analysis of large health surveys and application to frailty index

80 Xiao‡, M., Merikangas, K., **Zipunnikov, V.**, Multivariate measures of stability and connectivity of affective circumplex domains

81 **Zipunnikov, V.**, Maity, S., Detrended Fluctuation Analysis: long-memory properties in accelerometry-measured physical activity

82 **Zipunnikov, V.**, Chakraborty, S., Schrack, J., Towards ageless biomarkers: the concept and methods to derive

83 Urbanek[‡], J., Spira, A., **Zipunnikov, V.**, Social jet-lag in adolescence

84 **Zipunnikov, V.**, Johns, J., Swendsen, J., Merikangas, K., Migraine: triggers and predictors estimated by electronic diaries

Book Chapters

85 Eloyan, A., **Zipunnikov, V.**, Yang, J., Caffo, B. Multivariate Decompositions in Brain Imaging Handbook of Modern Statistical Methods: Neuroimaging Data, 2017, CRC Press

TEACHING

Advisees

1 Ximin Li, Master of Science, Biostatistics, (2013-2015).

2 Hanying Li, Master of Science, Biostatistics, (2014-2016).

3 Aaron Fisher, Doctor of Philosophy, Biostatistics, (2011-2016). Takeda Pharmaceuticals.

4 Chen Yue, Doctor of Philosophy, Biostatstics, (2011-2016).

5 Jiawei Bai, Doctor of Philosophy, Biostatstics, (2012-2017).

6 Yu Du, Doctor of Philosophy, Biostatstics, (2013-2018), Eli Lilly and Company.

7 Jordan Johns, Doctor of Philosophy, Biostatistics, (2014-2019), Eli Lilly and Company.P)

8 Junrui Di, Doctor of Philosophy, Biostatistics, (2014-2019), Pfizer.

9 Debangan Dey, Doctor of Philosophy, Biostatistics, (2017-Present).

Academic Advisees

1 Jordan Johns, Doctor of Philosophy, Biostatistics (2014-2015).

2 Junrui Di, Doctor of Philosophy, Biostatistics (2014-2015).

3 Debangan Dey, Doctor of Philosophy, Biostatistics (2017-Present).

Thesis Committees / Thesis Reader

1 Bing He, Master of Science, Biostatistics (2016).

2 Esther Kim, Doctor of Philosophy, Epidemiology (2018-present).

Interns

1 Debangan Dey, Indian Statistical Institute, (2015, 2016).

2 Subha Maity, Indian Statistical Institute, (2016, 2017).

3 Sunrit Chakraborty, Indian Statistical Institute, (2017, 2018).

4 Rashmi Bhuyan, Indian Statistical Institute, (2018).

Preliminary Oral Participation

1 Aaron Fisher, Doctor of Philosophy, Biostatistics, (2014).

2 Chen Yue, Doctor of Philosophy, Biostatstics, (2014).

3 Gilliam Grisham, Doctor of Philosophy, Epidemiology, (2016).

4 Alexandra Wennberg, Doctor of Philosophy, Mental Health, (2015).

5 Jiawei Bai, Doctor of Philosophy, Biostatstics, (2015).

6 Daisy Zhu, Doctor of Philosophy, Biostatistics, (2016).

7 Detian Deng, Doctor of Philosophy, Biostatistics, (2016).

8 Yu Du, Doctor of Philosophy, Biostatstics, (2016).

Final Oral Participation

1 Aaron Fisher, Doctor of Philosophy, Biostatistics, (2016).

2 Chen Yue, Doctor of Philosophy, Biostatstics, (2016).

3 Jiawei Bai, Doctor of Philosophy, Biostatstics, (2017).

4 Alexandra Wennberg, Doctor of Philosophy, Mental Health, (2017).

5 Daisy Zhu, Doctor of Philosophy, Biostatistics, (2018).

6 Detian Deng, Doctor of Philosophy, Biostatistics, (2018).

7 Yu Du, Doctor of Philosophy, Biostatistics, (2018).

Classroom Instruction - Principal Instructor

○ PHP 140.755 Advanced Methods of Biostatistics 5, (2013, 2014).

○ PHP 140.756 Advanced Methods of Biostatistics 6, (2013, 2014).

○ PHP 140.850 Applied Functional Data Analysis, (2013).

○ PHP 140.644 Statistical Machine Learning: Methods, Theory, and Applications, (2016, 2017, 2018).

Classroom Instruction - Co-Instructor

○ PHP 140.753 Advanced Methods of Biostatistics, Labs, (2016).

○ PHP 140.754 Advanced Methods of Biostatistics, Labs, (2016).

○ PHP 140.850 Optimization Methods in Statistics, (2018).

RESEARCH GRANT PARTICIPATION

Ongoing Research Support

○ Actigraphic Assessment of Sleep Quality in the Anti-Amyloid Treatment of Asymptomatic Alzheimer's Disease (A4) Trial
NIH/NIA R01AG049872-01 (Paul Rosenberg)
September 2015 - March 2020
Co-Investigator, 15% effort

○ The ARIC study of midlife sleep and late-life brain amyloid
NIH/NIA 1RF1AG050745-01A1 (Adam Spira)
June 2016 - May 2021
Co-Investigator, 8% effort

○ Poor Sleep, Altered Circadian Rhythms and Alzheimers Disease
NIH/NIA R01AG050507 (Adam Spira)
September 2015 - June 2020
Co-Investigator, 15% effort

○ Circadian rhythm disturbance and agitation in Alzheimer's disease
NIH/NIA R01AG054771 (Paul Rosenberg)
June 2017 - June 2022
Co-Investigator, 15%

○ Defining and Quantifying Fatigability in Functionally Independent Older Adults
NIH/NCI R21AG053198 (Jennifer Schrack)
September 2016 - April 2018
Co-Investigator, 15% effort

○ Energy Reserves, Physical Activity, and Alzheimer's disease
NIH/NIA R01AG057545 (Jennifer Schrack)
July 2017 - June 2022
Co-Investigator, 15% effort

○ Genetic Epidemiology Research Branch
NIH/NIMH IPA (Kathleen Merikangas)
April 2015 - April 2019
Statistical consultant, 15% effort

○ Somatosensory Inhibitory Dysfunction in Autism Spectrum Disorder
NIH/NIMH 1R01MH106564-01A1 (Richard Edden)
January 2016 - November 2020
Co-Investigator, 10% effort

○ Catalyst Award
Johns Hopkins University (Vadim Zipunnikov)
Auguest 2017 - July 2018
Principal Investigator

Completed

○ Statistical methods for biosignals with varying domains
NHLBI/R01HL123407 (Ciprian Crainiceanu)
September 2014 - August 2018
Co-Investigator, 20% effort

○ Human Locomotor Plasticity in Health and Disease
NIH/NINDS 2R37NS090610-10A1 (Amy Bastian)
July 2015 - July 2018
Co-Investigator, 10% effort

○ Real-Time Monitoring in Multiple Sclerosis with wearable devices
Sanofi Genzyme Inc. (Ellen Mowry)
February 2017 - February 2018
Co-Investigator, 10% effort

○ Ancillary study of substrate and intervention mechanisms for malignant arrhythmia
NHLBI/1R01HL116280-01A1 (Saman Nazarian)
November 2013 - January 2018
Biostatistician, 5% effort

○ Monitoring and Improving Patient Recovery after Cardiac Surgery Using Activity Monitors
JHU/inHealth (Charles Brown)
January 2016 - December 2016
Co-Investigator

○ Statistical Methods for Real-Time Monitoring of Physical Disability in Multiple Sclerosis
JHU/IDIES (Vadim Zipunnikov)
June 2015 - June 2016
Principal Investigator

○ Predicting acute compartment syndrome using optimized clinical assessment, continuous pressure monitoring, and continuous tissue oximetry
Department of Defense/PRORP W8XWH-10-2-0090 (METRCII)(Ellen MacKenzie)
September 2012 - August 2016
Biostatistician, 20% effort

○ Techniques for Analysis of Wrist-Worn Accelerometers
NIA/Coeus 64063 September 2014 - September 2016
(Tamara Harris)

○ Fetal Neurobehavioral Development and Postnatal Continuity
NICHD (Janet DiPietro)
September 2014 - August 2015
Biostatistician, 20% effort

○ Modeling Collaboration to Shift Sand, Peru & CONTENT Study
Bill and Melinda Gates Foundation/90059161 (William Checkley)

August 2014 - December 2015
Co-Inverstigator, 20% effort

ACADEMIC SERVICE

Department of Biostatistics

○ Organizer, Biostatistics Department Seminar, (2012-2013).

○ Department Representative, Faculty Senate, (2016-2018).

○ Head, Events committee, (2017-Present).

Bloomberg School of Public Health

○ Member, Faculty Search Committee, Bloomberg American Health Initiative, (2018-Present).

PRESENTATIONS

Scientific Meetings

2012 and before

1 April 2000, Kolmogorov's Days 2, Steklov Mathematics Institute, Moscow, Russia

2 March 2001, 6th Spring Meeting of Young Economists, University of Copenghagen, Denmark

3 April 2003, 13th NES Research Conference, NES, Moscow

4 August 2006, JSM 2006, Seattle, WA

5 February 2009, Department of Biostatistics, Johns Hopkins University, Baltimore, MD

6 March 2010, Bioinformatics Seminar, Texas A&M University, College Station, TX

7 June 2010, Modern Massive Data Sets 2010, Stanford University, Palo Alto, CA

8 November 2010, AOD: Interface Functional and Longitudinal Data Analysis, SAMSI, NC

9 December 2010, Brain Imaging Group (webinar), SAMSI, Raleigh, NC

10 March 2011, ENAR 2011, Miami, FL

11 June 2011, Statistical Methods for Very Large Data Sets, Baltimore, MD

12 August 2011, JSM 2011, Miami, FL

13 October 2011, Hopkins Imaging Conference, Baltimore, MD

14 March 2012, ENAR 2012, Washington, DC

15 August 2012, JSM 2012, San-Diego, CA

16 September 2012, Statistical and Computational Methodology for Massive Datasets, SAMSI, NC

2013

17 March 2013, ENAR 2013, Orlando, FL

18 April 2013, 6th Annual Research on Aging Showcase, JHSPH, Baltimore, MD

19 June 2013, 3rd International Conference on Ambulatory Monitoring of Physical Activity and Movement

20 August 2013, JSM 2013, Montreal, Canada

21 November 2013, Gerontological Society of America 2013, New Orleans

2014

22 March 2014, ENAR 2014, Baltimore

23 June 2014, Society for Research on Biological Rhythms 2014, Montana

24 June 2014, Modern Massive Data Sets 2014, Berkeley University, SF, CA

25 August 2014, topic-contributed session, JSM 2014, Boston

26 November 2014, invited symposium, GSA 2014, DC

2015

27 June 2015, Society for Ambulatory Assessment 4, Pennsylvania State University

28 November 2015, Gerontological Society of America, Orlando, FL

2016

29 March 2016, ENAR, Austin, TX

30 May 2016, Society for Research on Biological Rhythms, Palm Harbor, Fl

31 June 2016, 2nd Annual Johns Hopkins Sleep & Circadian Research Day, JHU, MD

32 August 2016, JSM, Chicago, IL

33 November 2016, Gerontological Society of America, New Orleans, LA

2017

34 March 2017, ENAR, Washington, DC

35 June 2017, ICAMPAM 2017, NIH, Bethesda, MD

36 July 2017, IAGG, San-Francisco, DC

37 August 2017, JSM, Baltimore, MD

2018

38 March 2018, ENAR, Atlanta, GA

39 May 2018, Society for Research on Biological Rhythms, Amelia Island, FL

40 June 2018, ICSA, Rutgers University, NJ

41 August 2018, JSM, Vancouver, Canada

42 October 2018, 3rd Seattle Symposium on Health Care Data Analytics, Seattle

43 March 2019, ENAR, Philadelphia, PA

Invited Seminars

44 April 2011, Department of Statistical Science, Cornell University, Ithaca, NY

45 October 2011, Department of Statistics, University of Florida, Gainesville, FL

46 January 2012, Department of Statistics, University of Iowa, Iowa City, IA

47 January 2012, Department of Statistics, University of Georgia, Athens, GA

48 January 2012, Department of Biostatistics, Indiana-Purdue University, Indianapolis, IN

49 January 2012, Department of Statistics, Virginia Tech, Blacksburg, VA

50 February 2012, Department of Statistics, University of Wisconsin-Madison, Madison, WI

51 February 2012, Department of Biostatistics, Johns Hopkins University, Baltimore, MD

52 February 2012, Department of Statistics, George Mason University, Fairfax, VA

53 October 2012, Department of Statistics, George Washington University, DC

54 November 2012, PennSIVE working group, Department of Biostatistics and Epidemiology, University of Pennsylvania, PA

55 March 2014, Department Colloqium, Department of Mathematics, Tulane University

56 March 2014, Workshop in Bioinformatics and Statistics, Department of Biostatistics, Georgetown University

57 April 2014, Department of Biostatistics, University of Pennsylvania

58 September 2014, Department of Statistics, Pennsylvania State University

59 April 2015, School of Industrial and Systems Engineering, Georgia Tech University

60 September 2015, Functional Data Seminar, Department of Statistics, NCSU

61 September 2015, Department Colloqium, Department of Biostatistics, Columbia University

62 February 2015, Healthy Birth, Growth and Development Knowledge Integration, Bill and Gates Foundation, DC

63 September 2016, Pfizer Neuroscience, Boston, MA

64 October 2016, Biostatistics Division, Northwestern University, Chicago, IL

65 April 2017, Department of Biostatistics, University of Minnesota

66 March 2018, CoLaus Study: advisory board meeting, Lausanne, Switzerland

67 January 2019, Center for Weight, Eating and Lifestyle Science, Drexel University