

Arvind “Rasi” Subramaniam

Assistant Member
Fred Hutchinson Cancer Research Center

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Education

Ph.D. in Physics, University of Chicago 2008
B.Tech. in Metallurgical and Materials Engineering, Indian Institute of Technology Madras, India 2004

Research Positions

Assistant Member in Basic Sciences Division & Computational Biology Section of Public Health Sciences Division
Fred Hutchinson Cancer Research Center 2015-

Affiliate Assistant Professor, Department of Genome Sciences and Department of Biochemistry
University of Washington 2016-

Postdoctoral Fellow at the Center for Systems Biology, Harvard University
Advisors: Erin O’Shea, Philippe Cluzel 2008-15

Graduate Fellow in Theoretical Condensed Matter Physics, University of Chicago
Advisor: Ilya Gruzberg 2005-08

Honors

Sidney Kimmel Scholar 2017
K99/R00 Pathway to Independence Award, National Institutes of Health (NIH) 2013-17
Wentzel Research Prize for outstanding research in theoretical physics, University of Chicago 2007
Chandrasekhar, McCormick, and Sachs Graduate Research Fellowships, University of Chicago 2004-06
Dhandapani Memorial Prize for highest GPA in Metallurgical and Materials Engineering, IIT Madras 2004

Short-term Research Positions

Institute for Pure and Applied Mathematics, University of California, Los Angeles
Participant in the Program on ‘Random Shapes’ 2007

Kavli Institute for Theoretical Physics, University of California, Santa Barbara
Visiting Affiliate in the Program on ‘Stochastic Geometry and Field Theory’ 2006

University of Chicago, Graduate Research in Experimental Condensed Matter Physics
Resistance noise in electron glasses, Advisor: Thomas Rosenbaum 2004-05

California Institute of Technology, Summer Undergraduate Research Fellow
‘Sol-Gel’ technique for synthesizing ferroelectric thin films, Advisor: Sossina Haile 2003

Talks

Winter q-bio Conference, Hawaii 2017
Cold Spring Harbor Meeting on Translational Control 2016
Invited Seminar, Biochemistry, University of Washington, Seattle 2016
Invited Seminar, Computational Biology and Genome Sciences, University of Washington Seattle 2016
Invited Seminar, Molecular Biology and Genetics, Johns Hopkins School of Medicine, Baltimore 2014
Boston Bacterial Meeting, Cambridge 2014

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| Integrative RNA biology Conference, Boston | 2014 |
| Eighth q-bio Conference on Predictive Modeling of Cellular Regulation, Santa Fe | 2014 |
| Boston Bacterial Meeting, Cambridge | 2012 |
| Fourth q-bio Conference on Cellular Information Processing, Santa Fe | 2010 |
| International Workshop on Nanoscale Superconductivity and Magnetism, Argonne | 2005 |

Teaching Experience

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| Teaching Fellow, Foundations of Systems Biology and Bioengineering, Harvard University | 2012 |
| Teaching Fellow, Introduction to Quantitative Tools for Cell Biology, Harvard University | 2010 |
| Teaching Assistant, Symplectic Methods of Classical Dynamics, University of Chicago | 2008 |
| Teaching Assistant, Advanced Mathematical Methods of Physics, University of Chicago | 2008 |
| Teaching Assistant, Solid State Physics, University of Chicago | 2007 |

Service

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| Weintraub Graduate Student Award Selection Committee, Fred Hutchinson Cancer Research Center | 2017 |
| Organizer, Computational Biology Seminar Series, Fred Hutchinson Cancer Research Center | 2017 |
| Admissions Committee, Molecular and Cellular Biology Program, University of Washington and Fred Hutchinson Cancer Research Center | 2016-17 |
| Organizer, Microbial Sciences Initiative Journal Club, Harvard University | 2010 |
| Ad hoc Referee for Nature Communications, Cell Reports, Nature Microbiology, eLife, Physical Biology, Physical Review Letters, Physical Review B | 2008- |

Extramural Research Support

Current







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| NIH R35 GM119835 Regulation of Protein Synthesis by Synonymous Codon Usage Role: PI 231,000\$ direct costs per year | 2016-21 |
| Sidney Kimmel Scholarship Quantitative profiling of synonymous mutation effects in cancer cells Role: PI 100,000\$ total costs per year | 2017-19 |

Completed

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| NIH K99/R00 GM107113 Role of Synonymous Codon Usage as Gene Regulators in Bacteria and Cancer Cells Role: PI 680,000\$ total costs over 4 years | 2013-17 |
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Publications

(✉ indicates corresponding author)

1. M. Ferrin, [A. R. Subramaniam](#) , Kinetic modeling predicts a stimulatory role for ribosome collisions at elongation stall sites in bacteria, *eLife*, 6:e23629, 2017
2. [A. R. Subramaniam](#) , B. Zid, E. K. O'Shea , An integrated approach reveals regulatory controls on bacterial translation elongation, *Cell*, 159, 1200, 2014
3. [A. R. Subramaniam](#), A. DeLoughery, N. Bradshaw, Y. Chen, E. K. O'Shea, R. Losick , Y. Chai , A serine sensor for multicellularity in a bacterium, *eLife*, 2:e01501, 2013
4. [A. R. Subramaniam](#), T. Pan, P. Cluzel , Environmental perturbations lift the degeneracy of the genetic code to regulate protein levels in bacteria, *Proceedings of the National Academy of Sciences*, 110, 2419, 2013
5. H. Obuse, [A. R. Subramaniam](#), A. Furusaki, I. A. Gruzberg, A. W. W. Ludwig, Conformal invariance, multifractality, and finite-size scaling at Anderson localization transitions in two dimensions, *Physical Review B*, 82, 035309, 2010
6. X. Jia, [A. R. Subramaniam](#), I. A. Gruzberg, S. Chakravarty, Entanglement entropy and multifractality at localization transitions, *Physical Review B*, 77, 014208, 2008
7. [A. R. Subramaniam](#), I. A. Gruzberg, A. W. W. Ludwig, Boundary criticality and multifractality at the 2D spin quantum Hall transition, *Physical Review B*, 78, 245105, 2008
8. H. Obuse, [A. R. Subramaniam](#), A. Furusaki, I. A. Gruzberg, A. W. W. Ludwig, Boundary multifractality at the integer quantum Hall plateau transition: implications for the critical theory, *Physical Review Letters*, 101, 116802, 2008
9. H. Obuse, [A. R. Subramaniam](#), A. Furusaki, I. A. Gruzberg, A. W. W. Ludwig, Corner multifractality for reflex angles and conformal invariance at 2D Anderson metal-insulator transition with spin-orbit scattering, *Physica E*, 40, 1404, 2008
10. H. Obuse, [A. R. Subramaniam](#), A. Furusaki, I. A. Gruzberg, A. W. W. Ludwig, Multifractality and conformal invariance at 2D metal-insulator transition in the spin-orbit symmetry class, *Physical Review Letters*, 98, 156802, 2007
11. A. Mildenberger, [A. R. Subramaniam](#), R. Narayanan, F. Evers, I. A. Gruzberg, A. D. Mirlin, Boundary multifractality in critical 1D systems with long-range hopping, *Physical Review B*, 75, 094204, 2007
12. [A. R. Subramaniam](#), I. A. Gruzberg, A. W. W. Ludwig, F. Evers, A. Mildenberger, A. D. Mirlin, Surface criticality and multifractality at localization transitions, *Physical Review Letters*, 96, 126802, 2006