

Education

Ph.D. 2008, Harvard University, Dept. of Physics

- Thesis: “ Measuring Black Hole Spin.”
- Advisors: Prof. Ramesh Narayan (Dept. of Astronomy), Dr. Jeffrey McClintock (Harvard-Smithsonian Center for Astrophysics)
- Best thesis prize in theoretical astrophysics awarded by Institute of Theory and Computation at the Harvard Center for Astrophysics.

B.S. 2002, California Institute of Technology

- Major: Physics, GPA: 4.0/4.0
- Undergraduate research in systems biology and observational astronomy.

Research

- **Postdoctoral Fellow, Harvard Medical School and the Broad Institute of MIT and Harvard** Jan 2013 - present
Advisor: Steven McCarroll
Combined analysis of neuroimaging (MRI) and genotype data of a psychosis cohort using statistical genetics approach to explore the relationship between genetic variants and changes in the anatomy and function of the human brain in schizophrenia.
- **Postdoctoral Research Associate, Howard Hughes Medical Institute and Center for Brain Science, Harvard University** Feb 2011- June 2012
Advisor: Randy Buckner
Investigation of the structural and functional changes in the brain associated with aging, and the relationship between anatomical and functional networks of the cortex using structural and functional MRI.
- **Swartz Fellow in Computational and Theoretical Neuroscience, Center for Brain Science, Harvard University** Feb 2009- Feb 2011
Simulations of pattern adaptation in the retina and the structure-function connection of the human brain using MRI and fMRI data.

- **Theoretical and Observational Astrophysics (Ph.D. work)** Jan 2005-
Nov 2008
 - Dept. of Physics, Harvard University and Harvard-Smithsonian Center for Astrophysics.
 - *Advisors*: Prof. Ramesh Narayan and Dr. Jeffrey McClintock.
 - Analysis of X-ray satellite data of black hole systems, numerical simulations and theoretical modeling of the region near a spinning black hole.
 - **First author of publication reporting first robust measurement of black hole spin**: 233 citations.
 - Co-Investigator of NASA **grant** NNH07ZDA001N-AFTP.
“Measuring black hole spin”. P.I. Ramesh Narayan, **\$200,000** for 2008-2010.
 - **Press Releases**:
http://www.nasa.gov/vision/universe/starsgalaxies/spinning_blackhole.html
<http://www.cfa.harvard.edu/news/2006/pr200630.html>

- **Systems biology, Caltech** Summer
2001
 - *Advisor*: Prof. Stephen Quake
 - Statistical analysis of microarray data to investigate gene expression correlations.
 - Co-I, **US Patent No. 6,947,846**:
“Non-metric tool for predicting gene relationships from expression data”, P.I. Stephen Quake (Sept, 2005).

Teaching Experience

- Graduate Teaching Fellow, Harvard University, Dept. of Physics Fall 2003-
Spring 2008
Seven semesters of experience in teaching sections of approximately 20 students for both undergraduate and graduate level classes. Work included leading discussions in section and designing assignments and exams for courses.

- Undergraduate Grader and Teaching Assistant, Caltech 2001-2002
Teaching assistant for sophomore physics lab.
Grader for freshman physics course.
Tutor for upper level physics courses.

Publications

In Refereed Journals:

Neuroscience

1. **Shafee R**, Buckner RL, Fischl B (2015). Gray matter myelination of 1555 human brains using partial volume corrected MRI images. *Neuroimage*, 105:473-85
2. Mueller S, Wang D, Fox MD, Yeo BT, Sepulcre J, Sabuncu MR, **Shafee R**, Lu J, Liu H (2013). Individual variability in functional connectivity architecture of the human brain. *Neuron*, 77:586-95.

Astrophysics

3. Penna RF, McKinney JC, Narayan R, Tchekhovskoy A, **Shafee R**, McClintock JE (2010). Simulations of magnetized discs around black holes: effects of black hole spin, disc thickness and magnetic field geometry. *MNRAS*, 408:752-782.
4. **Shafee R**, McKinney JC, Narayan R (2008). Three-Dimensional Simulations of Magnetized Thin Accretion Disks Around Black Holes: Stress in the Plunging Region. *The Astrophysical Journal Letters*, 687:L25-L28.
5. **Shafee R**, Narayan R, McClintock JE (2008); Viscous Torque and Dissipation in the Inner Regions of a Thin Accretion Disk: Implications for Measuring Black Hole Spin. *The Astrophysical Journal*; 676:549-561
6. McClintock JE, **Shafee R**, Narayan R, et al. (2006). The Spin of the Near-Extreme Kerr Black Hole GRS 1915+105; *The Astrophysical Journal*; 652:518-539 (343 citations).
7. **Shafee R**, McClintock JE, Narayan R, et al. (2006). Estimating the Spin of Stellar-Mass Black Holes by Spectral Fitting of the X-Ray Continuum. *The Astrophysical Journal Letters*; 236:L113-L116 (233 citations).

Neuroscience and Genetics Conference Presentations:

1. Shafee R, Holmes AJ, Genovese, G, Lee PH, Germine L, Roffman JL, Smoller JW, Buckner RL, McCarroll SA. "Common SNP heritability of brain structures and intracranial volume using MRI". Society for Neuroscience annual meeting (SFN), 2014, Washington DC.
2. Shafee R, Genovese G, Holmes AJ, Lee PH, Germine L, Roffman JL, Smoller JW, Buckner RL, McCarroll SA. "Significant role of height-associated variants in the variation of intracranial volume". American Society for Human Genetics annual meeting (ASHG), 2014, San Diego.

3. Shafee R, Buckner RL, Fischl B. "Estimated cortical gray matter myelination of 1500 human brains using partial volume corrected T1- and T2-weighted MRI images". Society for Neuroscience annual meeting (SFN), 2012, New Orleans.
4. Greve DN, Sabuncu MR, Shafee R, Schmansky N, Buckner RL, Fischl B. "Automated surface-based inter-hemispheric registration with FreeSurfer". Human Brain Mapping (HBM), 2011.
5. Shafee R, Liu H, Sabuncu, M, Yeo BT, Sepulcre J, Buckner RL. "Relationship between human functional networks and covariance in cortical thickness". Computational and Systems Neuroscience (COSYNE), 2011, Salt Lake City.
6. Shafee R, Liu H, Sabuncu MR, Yeo BT, Sepulcre J, Buckner RL. "Anatomical and Functional Asymmetry in the Cerebral Cortex". Society for Neuroscience annual meeting (SFN), 2010, San Diego.
7. Shafee R, Meister M. "A model for retinal pattern adaptation". Sloan-Swartz Centers annual meeting, 2009, Harvard University.

Awards and Honors (Academic)

- **Eric R. Keto Prize for best Ph.D. thesis in theoretical astrophysics**, June 2009
Institute for Theory and Computation, Harvard-Smithsonian Center for Astrophysics,
Harvard Dept. of Astronomy.
- **Swartz fellowship in theoretical neuroscience**, Harvard University Center for Brain April 2008
Science.
- **Van Vleck Prize**, Harvard University, Dept. of Physics Sept 2002
Award given to top applicants in entering Ph.D. class
- **Carnation Merit Award**, Caltech 2000-2002
Competition based merit award for undergraduates.
2001-2002: full tuition
2000-2001: 2/3 tuition
- Associate member of **Sigma Xi**, National Research Honor Society March 2001
By faculty nomination in junior year at Caltech.
- Elected to **Tau Beta Pi**, Caltech chapter, National Engineering Honor Society April 2001
- Merit scholarship of the Government of Bangladesh 1993-1997

Awards and Honors (non-academic)

- Represented Bangladesh at the London International Youth Science Forum (LIYSF). 1997
- Among top 5 debaters of all high schools and universities, National Debate Championship, Bangladesh Television. 1997
- Second prize, National Science Fair, Bangladesh. 1995
- Captain, runner-up team, National Debate Championship, Bangladesh Television. 1995
Awarded individual best speaker prize among all competitors that year.