
EDUCATION **Brown University**, Providence, RI
Sc. M., Ph.D., Physics (2007)

Sharif University of Technology, Tehran, Iran
Sc. B., Physics (2001)

INTERESTS

- Quantitative Biology, Computational Virology, Molecular Epidemiology, Metagenomics, Evolutionary Biology
- In my past life: Gravitational Lensing, Observational Cosmology

APPOINTMENTS **Postdoctoral Research Scientist** (September 2008 – Present)
Columbia University, Center for Computational Biology and Bioinformatics

Postdoctoral Research Associate (2007-2008)
Brown University, Department of Physics

Research Fellow (2001-2008)
Brown University, Department of Physics

PUBLICATIONS

- Khiabani H., et al. 2009. *Reassortment Patterns in Swine Influenza Viruses*. PLoS ONE. 4, e7366.
- Khiabani H., et al. 2009. *Differences in Patient Age Distribution between Influenza A Subtypes*. PLoS ONE. 4, e6832.
- Trifonov V., Khiabani H., Rabadan R. 2009. *Geographic Dependence, Surveillance and the Origins of the 2009 Influenza A (H1N1) Virus*. N Eng J Med. 361, 115.
- Trifonov V., Khiabani H., Greenbaum B., Rabadan R. 2009. *The origin of the recent swine influenza A (H1N1) virus infecting humans*. Euro Surveill. 14, pii:1919.
- Kubo J., Khiabani H., Dell'Antonio I., et al. 2009. *Dark Matter Halos in the Deep Lens Survey*. Astrophys J. 702, 980.
- Khiabani H., Dell'Antonio I. 2008. *A Multi-Resolution Weak Lensing Reconstruction Method*. Astrophys J. 684, 794.
- Khiabani H. 2008. *A Maximum-Likelihood Multi-Resolution Weak Lensing Mass Reconstruction Method*. Doctoral Dissertation. Brown University.
- Kubo J., Khiabani H., et al. 2007. *The Mass of Coma Cluster from Weak Lensing in SDSS*. Astrophys J. 671, 1466.

MANUSCRIPTS
IN PROGRESS

- Khiabani H., et al. 2009. *ParMap, an Algorithm for the Identification of Complex Genomic Variations in Nextgen Sequencing Data*.
- Van Vlierberghe P., Palomero T., Khiabani H., et al. 2009. *PHF6 mutations in T-cell acute lymphoblastic leukemia*.
- Greenbaum B., Trifonov V., Khiabani H., Levin A., Rabadan R. 2009. *The Emergence of 2009 H1N1 pandemic strain*.
- Michael T., Khiabani H., et al. 2009. *Metagenomic Analysis of Oral Cavity and Epstein-Barr Virus Diversity by High Throughput Sequencing by Ligation*.

CONFERENCE
PROCEEDINGS

- Kubo J., Khiabani H., et al. 2009. *Dark Matter Structures in the Deep Lens Survey*. American Astronomical Society, 213th Meeting, Bulletin of the American Astronomical Society, 41, 377.
- Kubo J., Khiabani H., et al. 2008. *Maximum Likelihood Weak Lensing Mass Reconstruction of the DLS F2 Field*. American Astronomical Society, 211th Meeting, Bulletin of the American Astronomical Society, 39, 160.05.
- Khiabani H., Dell'Antonio I. 2006. *A Multi-Resolution Weak Lensing Reconstruction Method*. American Astronomical Society, 209th Meeting, Bulletin of the American Astronomical Society, 38, 927.

CONFERENCE
PROCEEDINGS
(cont.)

- Kubo J., Khiabani H., et al. 2006. *A Weak Lensing Study of the Coma Cluster in SDSS*. American Astronomical Society, 209th Meeting, Bulletin of the American Astronomical Society, 38, 1000.
- Khiabani H., Dell'Antonio I. 2005. *A Multi-Resolution Weak Lensing Reconstruction Method*. American Astronomical Society, 207th Meeting, Bulletin of the American Astronomical Society, 37, 1428.

PRESENTATIONS

- Kubo J., Khiabani H., et al. *Dark Matter Structures in the Deep Lens Survey*. OZ Lens, University of Sydney, Sydney, Australia, Sep 2008.
- Khiabani H. *Statistics of Dark Matter Halos via Maximum-Likelihood Weak Lensing Mass Reconstruction*. Rutgers University, May 2008.
- Kubo J., Khiabani H., et al. *Dark Matter Structures in the Deep Lens Survey*. Space Telescope Science Institute 2008 Spring Symposium: A Decade of Dark Energy, Baltimore, MD, May 2008.
- Khiabani H., et al., *Analysis of Perseids Meteor Shower*. Annular Physics Conference of Iran, Sabzevar, Iran, Aug 2001.

RESEARCH
EXPERIENCE

Research Scientist, Columbia University, C2B2 (2008-Present)

- Performed the first genomic analysis on the origins of the 2009 human H1N1 influenza A virus of swine origin.
- Conducted a systemic analysis on the worldwide surveillance of the influenza viruses in different hosts to study the reasons behind the lack of close relatives to the 2009 H1N1 pandemic strain.
- Designed statistical methods to study the reassortment patterns in swine influenza A viruses, confirming previous results from human viruses, in addition to reporting the frequent reassortment of one of the polymerase coding segments (PB1).
- Developing complex bioinformatics methods and algorithms, in collaboration with scientists at Institute for Cancer Genetics of Columbia University, to further analyze the genomic datasets produced by next-generation sequencing technologies to investigate the genetic aspects of human cancer, especially in Leukemia.
- Investigated the differential distribution of age within the human populations that exhibit the symptomatic influenza caused by different subtypes of the virus, finding that the symptomatic flu due to H3N2 is distributed across all age groups, whereas H1N1 causes symptomatic disease mainly in a younger population.
- Performed novel statistical and numerical analysis on metagenomic datasets obtained via next-generation sequencing technologies to study the diversity and evolution of organisms in the oral cavity, especially Epstein-Barr virus.

Research Associate, Brown University, Dept. of Physics (2007-2008)

Research Fellow, Brown University, Dept. of Physics (2001-2007)

- Developed a novel regularized maximum-likelihood technique for reconstructing multi-resolution maps of mass concentration for discovering new clusters of galaxies and measuring their masses.
 - Conducted complex computer simulations to model the gravitational effect of massive galaxy clusters on the shape of background galaxies.
 - Shared responsibility of collecting, reducing, analyzing, and maintaining of a unique astronomical dataset, obtained by The Deep Lens Survey Project.
 - Collaborated extensively on a variety of Astrophysical projects e.g., SHELS Redshift Survey (Smithsonian Center for Astrophysics) and Coma Cluster's Shear Mass (Fermilab).
-

RESEARCH EXPERIENCE (cont.) **Sharif University of Technology**, Dept. of Physics (1997-2001)

- Led a three year long observational project to model the Perseids meteor shower.
- Head of the Amateur Astronomy Group of Sharif Univ. of Technology (1999-2000).

OTHER PUBLICATIONS **Photography**

- Invited Artist, Unbound Press, Inaugural Issue, Glasgow, UK, Winter 2007
- Contributor, Issues Magazine, Brown University-RISD, Providence, RI, Winter 2007

SKILLS **Mathematics, Analytics**

- Extensive experience in Statistical and Numerical analyses techniques: Monte-Carlo Methods, Statistical Modeling of Data, Interpolation and Extrapolation Techniques, Solving ODE and PDE numerically and analytically

Programming, Computing

- Languages: C, C++, Perl, MATLAB, Pascal, Basic
 - Operating Systems: Unix (Solaris), Linux, Mac, Windows and DOS
-