Mohammadreza Zakeri

Research Interests

My research is focused primarily on models beyond the Standard Model (SM), designed for the purpose of explaining the nature of Dark Matter (DM) and the origin of neutrino mass. I work on gauge extensions of the SM, flavor physics, radiative processes, direct and indirect signatures of DM in experiments. My work also involves testing various models using the data from particle colliders such as the LHC. I also analyze the results from cosmic ray detectors like DAMPE, and AMS-02 to constrain new models.

Employment

2017-2020   **Postdoc at Institute of Theoretical Physics (ITP), Chinese Academy of Sciences (CAS)**.
Beijing, P. R. China

2012-2017   **Teaching Assistant at UC Riverside**.
California, USA

Education

2012-2017   **University of California, Riverside**, Riverside, California
Doctor of Philosophy (2017), Master of Science (2013)
Advisor: Ernest Ma
PhD Thesis: "Extensions of the Standard Model with Dark Matter in Some Explicit Examples"
PhD Defense Date: June 21st 2017 (Received on September 16th 2017)

2008-2012   **Sharif University of Technology**, Tehran, Iran.
Bachelor of Science in Physics

2001-2008   **Rouzbeh Institute**, Tehran, Iran.
Diploma in Mathematics and Physics

Awards & Honors

2019   CAS President's International Fellowship Initiative (PIFI) from the Chinese Academy of Sciences

2017   Outstanding Teaching Assistant Award from the Department of Physics & Astronomy at UCR

2016   Three GSA Conference Travel Grant Awards from UC Riverside

2012   Dean's Distinguished Fellowship from Graduate Division of UC Riverside

2011   Ranked 4th in the nationwide M.Sc. entrance exam in physics in Iran

Publications

1. **Exotic Lepton-Flavor Violating Higgs Decays**, *J. A. Evans, P. Tanedo, M. Zakeri*, JHEP 01 (2020) 028, [arXiv:1910.07533].

2. **Non-Abelian Vector Boson as FIMP Dark Matter**, *B. Barman, S. Bhattacharya, M. Zakeri*, JCAP 02 (2020) 029, [arXiv:1905.07236].

3. **Multipartite Dark Matter in $SU(2)_N$ Extension of Standard Model and Signatures at the LHC**, *B. Barman, S. Bhattacharya, M. Zakeri*, JCAP 09 (2018) 023, [arXiv:1806.01129].

4. **A Minimal Model For Two-Component FIMP Dark Matter: A Basic Search**, *S. P. Zakeri, S. M. MoosaviNejad, S. Y. Ayazi, M. Zakeri*, Chin. Phys. C42 (2018) no.7, 073101, [arXiv:1801.09115].

5. **Alternative $[SU(3)]^4$ Model of Leptonic Color and Dark Matter**, *C. Kownacki, E. Ma, N. Pollard, O. Popov, M. Zakeri*, Nucl. Phys. B928 (2018) 520-534, [arXiv:1801.01379].

6. **Dark Revelations of the $[SU(3)]^3$ and $[SU(3)]^4$ Gauge Extensions of the Standard Model**, *C. Kownacki, E. Ma, N. Pollard, O. Popov, M. Zakeri*, Phys. Lett. B777 (2018) 121-124, [arXiv:1710.00762].

7. **Dark Gauge U(1) Symmetry for an Alternative Left-Right Model**, *C. Kownacki, E. Ma, N. Pollard, O. Popov, M. Zakeri*, Eur. Phys. J. C78 (2018) no.2, 148, [arXiv:1706.06501].

8. **Quartified Leptonic Color, Bound States, and Future Electron-Positron Collider**, *C. Kownacki, E. Ma, N. Pollard, O. Popov, M. Zakeri*, Phys. Lett. B769 (2017) 267-271, [arXiv:1701.07043].

9. **Generalized Gauge U(1) Family Symmetry for Quarks and Leptons**, *C. Kownacki, E. Ma, N. Pollard, M. Zakeri*, Phys. Lett. B766 (2017) 149-152, [arXiv:1611.05017].

10. **Gauge $B-L$ Model of Radiative Neutrino Mass with Multipartite Dark Matter**, *E. Ma, N. Pollard, O. Popov, M. Zakeri*, Mod. Phys. Lett. A31 (2016) no. 27, 1650163, [arXiv:1605.00991].

11. **Phenomenology of the Utilitarian Supersymmetric Standard Model**, *S. Fraser, C. Kownacki, E. Ma, N. Pollard, O. Popov, M. Zakeri*, Nucl. Phys. B 909, 644 (2016), [arXiv:1603.04778].

12. **Verifiable Associated Processes from Radiative Lepton Masses with Dark Matter**, *S. Fraser, E. Ma, M. Zakeri*, Phys. Rev. D 93, 115019 (2016), [arXiv:1511.07458].

13. **Gauge $B-L$ Model with Residual Z_3 Symmetry**, *E. Ma, N. Pollard, R. Srivastava, M. Zakeri*, Phys. Lett. B750 (2015) 135-138, [arXiv:1507.03943].

14. **$SU(2)_N$ Model of Vector Dark Matter with a Leptonic Connection**, *S. Fraser, E. Ma, M. Zakeri*, Int. J. Mod. Phys. A 30, 1550018 (2015), [arXiv:1409.1162].

Talks & Posters

1. **Exotic Lepton-Flavor Violating Higgs Decays**, *Conference Talk: New physics beyond the Standard Model (PICTP program)*.
Beijing, China, Oct 2019

2. **Dark Gauge U(1) and the DAMPE Signal**, *Poster: KEK Theory Meeting 2018(KEK-PH2018)*.
Tsukuba, Japan, Feb 2018

3. **Leptonic Color, and the Future Electron-Positron Collider**, *Journal Club Talk: Institute of Theoretical Physics, Chinese Academy of Sciences*.
Beijing, China, Nov 2017

4. **Gauge $B-L$ Model with Residual Z_3 Symmetry**, *Invited Talk: BLV 2017*.
Cleveland, OH, USA, May 2017

5. **Quartified Leptonic Color, Bound States, and Future Electron-Positron Collider**, *Journal Club Talk: UC, Riverside*.
Riverside, CA, USA, May 2017

6. **Leptonic Color, and the Future Electron-Positron Collider**, *Invited Talk: Institute of Modern Physics, Chinese Academy of Sciences*.
Lanzhou, China, Dec 2016

7. **Asymmetric Reheating After Inflation**, *Poster: COSMO-16.*
   Ann Arbor, MI, USA, Aug 2016

8. **Radiative Lepton Masses**, *Conference Talk: Phenomenology 2016 Symposium.*
   Pittsburgh, PA, USA, May 2016

Conferences & Schools

1. PICTP program: New physics beyond the Standard Model, Beijing, China, Oct 2019
2. KEK Theory Meeting 2018(KEK-PH2018), Tsukuba, Japan, Feb 2018
3. Winter School on Gravitational-Wave Data Analysis, Beijing, China, Dec 2017
4. International Workshop on Baryon & Lepton Number Violation 2017, Cleveland, OH, USA, May 2017
5. SOCAL BSM 2017, Riverside, CA, USA, Apr 2017
6. COSMO-16, Ann Arbor, MI, USA, Aug 2016
7. TASI Summer School, Boulder, CO, USA, June-July 2016
8. Phenomenology 2016 Symposium, Pittsburgh, PA, USA, May 2016

Teaching Experiences

University of California, Riverside, Riverside, California

Summer 2017	*Teaching Assistant*, PHYS 040B: General Physics Laboratory
Spring 2017	*Teaching Assistant*, PHYS 040B: General Physics
Winter 2017	*Teaching Assistant*, PHYS 02LB: General Physics Laboratory
Fall 2016	*Course Grader*, PHYS 221A: Quantum Mechanics
	Teaching Assistant, PHYS 156A: Quantum Mechanics
Summer 2016	*Instructor*, Physics GRE Preparation Course
Spring 2016	*Course Grader*, PHYS 221C: Quantum Mechanics
	Course Grader, PHYS 212B: Thermodynamics And Statistical Mechanics
Winter 2016	*Course Grader*, PHYS 221B: Quantum Mechanics
	Teaching Assistant, PHYS 156B: Quantum Mechanics
Fall 2015	*Course Grader*, PHYS 221A: Quantum Mechanics
	Teaching Assistant, PHYS 156A: Quantum Mechanics
Summer 2015	*Instructor*, Physics GRE Preparation
Spring 2015	*Course Grader*, PHYS 221C: Quantum Mechanics
	Teaching Assistant, PHYS 040B: General Physics
Winter 2015	*Course Grader*, PHYS 221B: Quantum Mechanics
	Teaching Assistant, PHYS 156B: Quantum Mechanics
Fall 2014	*Course Grader*, PHYS 221A: Quantum Mechanics
	Teaching Assistant, PHYS 156A: Quantum Mechanics
Summer 2014	*Teaching Assistant*, PHYS 040C: General Physics
Spring 2014	*Teaching Assistant*, PHYS 040C: General Physics
Winter 2014	*Teaching Assistant*, PHYS 02LB: General Physics Laboratory
Fall 2013	*Teaching Assistant*, PHYS 040C: General Physics Laboratory
Summer 2013	*Teaching Assistant*, PHYS 040C: General Physics Laboratory
Spring 2013	*Teaching Assistant*, PHYS 040C: General Physics Laboratory
Winter 2013	*Teaching Assistant*, PHYS 02LB: General Physics Laboratory

Fall 2012	*Teaching Assistant*, PHYS 02LA: General Physics Laboratory
	Rouzbeh Institute, Tehran, Iran
Summer 2010	*Teacher*, 3DS MAX Software
Fall 2010	*Teacher*, Adobe After Effect Software

Computer Skills

Python	Have experience with NumPy, SciPy, matplotlib, pandas, sklearn, quandl, multiprocessing, subprocess, math, random, re, cv2, shutil, time, os, sys, logging, gzip, tarfile, Tkinter, Pygame and the standard library.
C++	Have experience with omp, random, algorithm, cmath, array, string, ctime, chrono, fstream, vector, iostream libraries.
HEP	MadGraph, Pythia, Root, FastJet, FeynRules, FeynCalc, FeynArts, CalcHEP, SARAH
Others	Linux, LaTeX, Mathematica, MATLAB, Inkscape
GitHub	github.com/ZAKI1905

Languages

Farsi	*Native proficiency* in writing, reading, listening and speaking
English	*Bilingual proficiency* in writing, reading, listening and speaking
Mandarin	*Limited working proficiency* in reading, listening, speaking, writing

Personal Details

Place of Birth	*Tehran, Iran*
Date of Birth	*July 23rd 1990*
Nationality	*Iranian*
Website	zaki.netlify.com

References

Adviser	**Zhou, Yu-Feng**, *Email:* yfzhou@itp.ac.cn, *Professor at Institute of Theoretical Physics (ITP), Beijing, China.*
PhD Adviser	**Ernest Ma**, *Email:* ma@phyun8.ucr.edu, *Professor Emeritus at University of California, Riverside, USA.*

- **Flip Tanedo**, *Email:* flip.tanedo@ucr.edu, *Assistant Prof. at University of California, Riverside, USA.*
- **Hai-Bo Yu**, *Email:* hai-bo.yu@ucr.edu, *Assistant Prof. at University of California, Riverside, USA.*