



Prof Alok Bhushan Shukla

Assistant Professor, Mathematical and Physical Sciences Division
Ahmedabad University

Email: alok.shukla@ahduni.edu.in

Research Area

- Quantum Computing, Mathematical Optimization, Number Theory, Applied Mathematics
 - Number Theory, Automorphic Forms and Representations, Arithmetic Geometry, Optimization, Quantum Computation, Machine Learning.
-

Profile

Education & Scientific Career

- Assistant Professor, Mathematical and Physical Sciences Division, School of Arts and Sciences, Ahmedabad University (July 2020 - present)
 - Postdoctoral fellow, Department of Mathematics, University of Manitoba (July 2018- Jun 2020)
 - Graduate Teaching Assistant, Department of Mathematics, University of Oklahoma (2018)
 - PhD(Mathematics), The University of Oklahoma (2012-2018)
 - Deputy Manager, Hindustan Aeronautics Limited (Sept 2010 - July 2012)
 - Engineer (Flight Hangar) and Deputy Manager, Hindustan Aeronautics Limited (July 2004 - Sept 2010)
 - Software Engineer, IBM (2003-2004)
 - Software Developer, TCS (2002-2003)
-

Awards

- Mathematics Department Fellowship, The University of Oklahoma.(2013-2017)
 - Richard V. Andree Memorial Scholarship, The University of Oklahoma (2017)
 - Richard V. Andree Memorial Scholarship, The University of Oklahoma (2016)
 - Mathematics Department Scholarship, The University of Oklahoma (2016)
 - John Clark Brixey Graduate Scholarship, The University of Oklahoma (2015)
 - Sooner Heritage Scholarship, The University of Oklahoma (2013)
-

Membership of professional bodies and Editorial assignments:

- Served as an elected member of the Norman Public School's Gifted and Talented Advisory Council for 2015-2017.

Publications

- Co-dimensions of the spaces of cusp forms for Siegel congruence sub-groups in degree two, Pacific Journal of Mathematics 293(2018), no. 1, 207-244.
- A Short Proof of Cayley's Tree Formula, The American Mathematical Monthly, 125(2018), no. 1, 65 - 68.
- Trajectory optimization using Quantum computing, (with Prakash Vedula), Journal of Global Optimization, 75, 199-225 (2019). DOI: <https://doi.org/10.1007/s10898-019-00754-5>.
- On Klingen Eisenstein series with level in degree two, (with Ralf Schmidt). Journal of Ramanujan Mathematical Society, 34 (2019), 373-388.
- Means Compatible with Semigroup Laws, (with R. Padmanabhan), Quasigroups And Related Systems 27 (2019), 317 - 324.
- Pullback of Klingen Eisenstein series and certain critical L-values identities, Ramanujan Journal (2020), <https://doi.org/10.1007/s11139-019-00246-w>
- Orchards in elliptic curves over finite fields, (with R. Padmanabhan), Finite Fields and Their Applications, Volume 68, December 2020, 101756, DOI: <https://doi.org/10.1016/j.ffa.2020.101756>.
- When do we have $1 + 1 = 11$ and $2 + 2 = 5$?, (with R. Padmanabhan), To appear in The Mathematical Gazette, <https://arxiv.org/pdf/1906.02324.pdf>.

Preprints

- Tiling proofs of Jacobi triple product and Rogers-Ramanujan identities, <https://arxiv.org/pdf/2006.03878.pdf>
- Machine learning based trajectory optimization, (with Prakash Vedula), http://math.ou.edu/~ashukla/Trajectory_PCA.pdf

Math-education

- On teaching mathematics to gifted students, <https://arxiv.org/pdf/1911.10726.pdf>