Mr. Pinaki Prasad Kar, OURIIP Project Fellow

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Details of the Funding Agency / Scheme	Odisha University Research and Innovation. Incentivization Plan (**OURIIP**), OSHEC, Higher Education Department Government of Odisha, India Sanction Number – 1040/69/OSHEC
Title of the research topic	**Some Aspects of q-Analogues of Orthogonal and Quasi-orthogonal Polynomials on $\mathbb{R}$**
Abstract of the research work (max. 300 words)	The main objective of this work is to investigate on the problems involving the properties of zeros of q-orthogonal polynomials reflecting the following aspects: • Interlacing and Stieltjes' interlacing properties of zeros of different polynomials that do not appear in the q-Askey scheme.

	• Interlacing and Stieltjes' interlacing properties of zeros of different q-orthogonal polynomials from the q-Askey scheme such as little q-Jacobi, q-Laguerre, q-Meixner, q-Kravchuk polynomials, etc. • Bounds for the least and the greatest zero of different q-orthogonal polynomials such as little q-Jacobi, q-Laguerre, q-Meixner, q-Kravchuk polynomials, etc. • Quasi-orthogonality of different q-orthogonal polynomials both from the q-Askey scheme and the polynomials those are not in the q-Askey scheme. • The monotonicity properties of zeros of different q-orthogonal polynomials.
Progress of the Research Work	**Four** papers have been published in International SCI/Scopus indexed/UGC listed journals. **One** paper has been communicated to an International SCI/Scopus indexed/UGC listed journal.
Journal Publications (International)	1. **P. P. Kar**, K. Jordaan, P. Gochhayat, M. Kenfack Nangho, Quasi-orthogonality and zeros of some $_2\phi_2$ and $_3\phi_2$ polynomials, J. Comput. Appl. Math. 377 (2020) 112910, 13 pages. 2. **P. P. Kar**, P. Gochhayat, Zeros of quasi-orthogonal q-Laguerre polynomials, J. Math. Anal. Appl. 506 (2022) 125605, 11 pages. 3. **P. P. Kar**, K. Jordaan, P. Gochhayat, Stieltjes interlacing of zeros of little q-Jacobi and q-Laguerre polynomials from different sequences, Numer. Algor. 92, 723 – 746 (2023). 4. **P. P. Kar**, P. Gochhayat, Interlacing and bounds of zeros of quasi-orthogonal little q-Jacobi polynomials, Numer. Algor. 93, 1157 – 1170 (2023). 5. **P. P. Kar**, P. Gochhayat, Interlacing of zeros of some $_2\phi_1$ polynomials associated with q-Meixner polynomials (Communicated).

Participation in Conferences	1. Presented a paper entitled **Interlacing of zeros of some $_2\phi_1$ polynomials associated with q-Meixner polynomials** in the 37th Annual Conference of the Ramanujan Mathematical Society, India, organised by Department of Mathematics, SSN College of Engineering, Kalavakkam, 603 110, Chennai, Tamil Nadu, India, held during December 6-8, 2022. 2. Presented a paper entitled **Stieltjes interlacing of zeros of little q-Jacobi and q-Laguerre polynomials from different sequences** in the International Conference on Special Functions & Applications (ICSFA-2022) (21st Annual Conference of SSFA, India), organised by Department of Studies in Mathematics, University of Mysore, Manasagangotri, 570 006, Mysuru, Karnataka, India & SSFA, India, held during November 26-28, 2022. 3. Participated in the **Webinar on Linear Algebra and Some of its Applications** organised by Department of Mathematics, CBSH, OUAT, Bhubaneswar, Odisha, India, held during October 7-8, 2021. 4. Presented a paper entitled **Interlacing properties of zeros of quasi-orthogonal q-Laguerre polynomials** in the 4th International Conference on Mathematical Modelling, Applied Analysis and Computation-2021 (ICMMAAC-21), organised by JECRC University, Jaipur, Rajasthan, India, held during August 5-7, 2021. 5. Presented a paper entitled **On the zeros of quasi-orthogonal little q-Jacobi polynomials** in the National Conference on Mathematical Analysis and Applications (NCMAA-2021), organised by Department of Mathematics, NIT Tiruchirapalli, Tiruchirapalli, Tamilnadu, India, held during April 23-24, 2021. **NOTE:** I have attended and presented my findings in total 14 National and International Conferences and Workshops.
Awards	**N O N E**