DR. SALAM KHAN

Professor of Mathematics

Research Interests

Mathematical Modeling, Mathematical soliton and optics, Complex System Modeling, Applied Statistics, Stochastic Perturbation, Kendall shape space, Experimental Design, Probability Theory and Approximation Theory.

Funded Grants/Projects

• PI- NSF EHR Grant ($2.4 million), July 2021 – June 2025.

• Co-PI- U.S. Department of Education Grant ($700,000), October 2021 – September 2024.

• PI- NSF HBCU-UP Grant ($199,990), September 2021 – August 2023.

• PI- NSF Robert Noyce Grant ($1,449,945), August 2018 – July 2023.

• Co-PI- NIFA-USDA Capacity Building Grant ($583, 086), March 2018 – March 2021.

• Co-PI- US POULTRY research grant ($71,300) May 2017- May 2019.

• Co-PI- NIFA-AFRI Foundational Grant ($480, 000), January 2016 – January 2020.

• Co-PI- USDA Evans Allen Grant ($13,050) for August 2013 - July 2014.

• Co-PI- USDA Evans Allen Grant ($11,000) for August 2012 - July 2013

Selected List of Publications

- OPTICAL SOLITONS IN FIBER BRAGG GRATINGS WITH CUBIC—QUARTIC DISPERSIVE REFLECTIVITY BY ENHANCED KUDRYASHOV'S APPROACH by Ahmed H. Arnous, Qin Zhou, Anjan Biswas, Padmaja Guggilla, Salam Khan, Yakup Yildirim, Ali S. Alshomrani & Hashim M. Alshehri. **Physics Letters A**. Volume 422, 127797. (2022).
- CUBIC—QUARTIC SOLITONS IN COUPLERS WITH OPTICAL METAMATERIALS HAVING QUADRATIC—CUBIC LAW OF NONLINEARITY by Elsayed M. E. Zayed, Mohamed E. M. Alngar, Reham M. A. Shohib, Anjan Biswas, Salam Khan, Yakup Yildirim, Hashim M. Alshehri & Ali S. Alshomrani. **Optik**. Volume 249, 168065. (2022).
- HEAT KERNEL APPROXIMATION ON KENDALL SHAPE SPACE by Mtibaa, Riadh; Khan, Salam. **Contemporary Mathematics.** Vol. 1 Issue 4, p 192-208; 2020
- SOLITONS IN BIREFRINGENT FIBERS WITH FOUR FORMS OF NONLINEAR REFRACTIVE INDEX BY EXP—FUNCTION EXPANSION by Yakup Yildirim, Anjan Biswas, Anwar Ja'afar Mohamad Jawad, Mehmet Ekici, Qin Zhou, Salam Khan, Abdullah Kamis Alzahrani & Milivoj R. Belic. **Results in Physics**. Volume 16, 102913. (2020).
- OPTICAL SOLITONS IN FIBER BRAGG GRATINGS HAVING KERR LAW OF REFRACTIVE INDEX WITH EXTENDED KUDRYASHOV'S METHOD AND NEW EXTENDED AUXILIARY EQUATION APPROACH by Elsayed M. E. Zayed, Mohamed E. M. Alngar, Mahmoud El—Horbaty, Anjan Biswas, Ali Saleh Alshomrani, Salam Khan, Mehmet Ekici & Houria Triki. **Chinese Journal of Physics**. Volume 66, 187—205. (2020).
- DIRECTIONAL DERIVATIVES ON KENDALL SHAPE SPACE by Mtibaa, Riadh; Khan, Salam, **Nonlinear Studies**, Vol 27 No. 1 pp 25-52; 2020.
- CONSERVATION LAWS OF BISWAS—ARSHED EQUATION IN OPTICAL FIBERS (FILLING IN THE GAP) by Salam Khan. **Optik**. Volume 194, 163037. (2019)

- SELF—SIMILAR OPTICAL SOLITONS WITH CONTINUOUS—WAVE BACKGROUND IN A QUADRATIC—CUBIC NON—CENTRO SYMMETRIC WAVEGUIDE by Houria Triki, Chaouki Bensalem, Anjan Biswas, Salam Khan, Qin Zhou, Samuel Adesanya, Seithuti P. Moshokoa & Milivoj Belic. **Optics Communications**. Volume 437, 392—398. (2019).
- OPTICAL SOLITONS AND CONSERVATION LAWS WITH POLARIZATION—MODE DISPERSION FOR COUPLED FOKAS—LENELLS EQUATION USING GROUP INVARIANCE by Anupma Bansal, Abdul H. Kara, Anjan Biswas, Salam Khan, Qin Zhou & Seithuti P. Moshokoa. **Chaos, Solitons & Fractals**. Volume 120, 245-249. (2019).
- INJECTIVITY RADIUS AND GEOMETRIC BOUND ON KENDALL SHAPE SPACE by Mtibaa, Riadh; Khan, Salam. **Nonlinear Studies**, Vol. 26, No. 3, pp 663-691; 2019.
- COMBO SOLITONS OF FIFTH ORDER NONLINEAR SCHRODINGER'S HIERARCHY WITH COMPLEX—AMPLITUDE HYPOTHESIS by Sassi Aouadi, Houria Triki, Anjan Biswas, Salam Khan, Luminita Moraru, Seithuti Moshokoa & Ali Saleh Alshomrani. **Journal of Optoelectonics and Advanced Materials**. Volume 21, Numbers 11—12, 679—684. (2019).
- GAUSSIAN MIXTURE MODEL FOR TEXTURE CHARACTERIZATION WITH APPLICATION TO BRAIN TDI IMAGES by Luminita Moraru, Simona Moldovanu, Lucian Traian Dimitrievici, Nilanjan Dey, Amira S. Ashour, Fuqian Shi, Simon James Fong, Salam Khan & Anjan Biswas. **Journal of Advanced Research**. Volume 16, 16—23. (2019).
- TANGENTIAL VECTOR FIELDS ON KENDALL SHAPE SPACE by Mtibaa¸ Riadh; Khan, Salam. **J. Adv. Math. Stud.** Vol. 11, No. 3, 520-527. (2018).

Book Chapters

- CHAPTER 4: DIGITAL IMAGE PROCESSING USING WAVELETS: BASIC PRINCIPLES AND APPLICATION by Luminița Moraru, Simona Moldovanu, **Salam Khan**, and Anjan Biswas, P: 71-96, **Applied machine learning for smart data analysis**, CRC Press, 2019.

- MATHEMATICAL MODEL OF CONFLICT AND COOPERATION WITH NON-ANNIHILATING MULTI- OPPONENT by Khan M. Salam, K.Takahashi. Chapter 13, **Unifying Themes in Complex Systems**: Vol VI, pp. 299-306, Springer-Verlag, New York, 2010.

Academic/ Professional Awards

- Featured as “AAMU 146 point of Pride” (2021-2022).
- Recipient of the "Professor of the Year" award from Alabama A&M University for 2020-2021.
- Featured as “AAMU 145 point of Pride” (2020-2021).
- Recipient of the Certificate of Recognition from the President of the AAMU President for external funding from NSF, 2019.
- Session’s Best Paper Award, 20th World Multi-Conference on Systemics, Cybernetics and Informatics, Orlando, FL, July 2016.
- Recipient of Postdoctoral fellowship, Department of Mathematics, Florida State University, August 2007 to August 2010.
- Japanese government "Monbukagakusho" Scholarship for Ph.D. program, October 2002- September 2006.