Special Issue on Optical Solitons honoring the 60th Birthday of Prof. Anjan Biswas

Prof. Anjan Biswas comes from Calcutta, India where he earned his B.Sc (Honors) from St. Xavier's College followed by M.Sc and M.Phil degrees in Applied Mathematics from the University of Calcutta. Subsequently, he completed his MA and Ph.D. in Mathematics from the University of New Mexico in Albuquerque, NM, USA. Thereafter he carried out his Post-Doctoral studies at the University of Colorado–Boulder under the supervision of the world–renowned Applied Mathematician Prof. Mark J. Ablowitz. It's in Colorado where Prof. Biswas was academically enriched and enlightened by Prof. Mark J. Ablowitz. His career took off after his memorable Colorado–days. Currently, Prof. Biswas works as the Endowed Chair of Mathematics at Grambling State University in Louisiana, USA.

After completing his Post–Doctoral training from the Centennial State, Prof. Biswas has been extensively conducting research on various aspects of optical solitons. A few droplets of the ocean are soliton–perturbation theory, quasi–stationary solitons, quasimonochromaticity, integrability of various models with a with a wide range of lately–proposed self–phase modulation (SPM) structures. He extended the pre–existing quasi–particle theory to non–Kerr laws of SPM as well as with non–Hamiltonian type perturbations for suppressing intra–channel interaction of solitons.

He did take a look at the then–popular dispersion–managed (DM) optical solitons. In this context, he studied several features that include collision–induced timing jitter, multiple–scales applied to the governing DM nonlinear Schrodinger's equation (NLSE). The corresponding Gabitov–Turitstyn equation (GTE) was extended with differential group delay and with DWDM topology. The derivation of the higher–order GTE for such optoelectronic devices later followed. He additionally touched base on the quasi–linear pulses where the nonlinearity is managed as opposed to DM solitons where chromatic dispersion (CM) is managed.

With a gradual decline in the popularity of DM solitons, Prof. Biswas restarted focusing on conventional solitons that are with constant CD. Here he investigated their several features. These include time–dependent coefficients, solitons with fractional temporal evolution for mitigating Internet bottleneck effect, gap solitons in fiber Bragg gratings, quiescent optical solitons for nonlinear CD by Lie symmetry and other mathematical approaches, magneto–optic waveguides, optical metamaterials, solitons with white noise, cubic–quartic optical solitons as well as highly dispersive solitons and supercontinuum generation, just to name a few. He applied several integration algorithms for soliton retrieval with several models. These range from Kudryashov's approach, semi–inverse variational principle, Jacobi's elliptic function approach, Weierstrass' elliptic function scheme, numerical study of optical solitons by the aid of Laplace–Adomian decomposition. This way he recovered cnoidal and snoidal waves in addition to soliton solutions. Additionally, he identified the conservation laws for a wide range of models with the application of Lie symmetry and/or by locating the Lagrangian of the governing model. He even broadened his horizons by studying optical Gaussons in addition to solitons. In this context, he reported several results that are on quasi–stationary optical Gaussons with arbitrary intensity, integration of the perturbed version of the NLSE with logarithmic law of nonlinearity where the results emerged in terms of Lambert's *W*–function.

Prof. Biswas also proposed improved models in this context that addresses the propagation of optical solitons across trans–continental and trans–oceanic distances. These are the *Biswas–Milovic equation*, *Biswas–Arshed equation* and the *Triki–Biswas equation*. Prof. Biswas has written three (3) books in this context. They are from non–Kerr law solitons, DM solitons and solitary waves. Apart from nonlinear optics, he wears another hat that is on Fluid Dynamics where he focuses only on shallow water waves. One of his latest contributions, from this field, is the location of the solitary waves and it's conservation laws, when the shallow water waves are modeled with the effect of surface tension included.

As a tireless and prolific researcher, Prof. Biswas published close to 2000 papers, to date, in several peer–reviewed journals across the globe. These attracted over 40,000 citations across the planet. His current H–index stands at 106. Additionally, he has been classified as a Highly Cited Researcher by Clarivate Analytics. He is also serving as Editor–in–Chief, Associate Editor, Founding Editor–in–Chief, Honorary Editor–in–Chief and Editorial Board member of an unrivalled number of Physics and Mathematics journals. To top it off, he also received the Outstanding Researcher Award from Delaware State University and Alabama A&M University where he had worked prior to joining Grambling State University.

It is with extreme pride and pleasure, Prof. Rostyslav Vlokh, the Editor–in–Chief of **Ukrainian Journal of Physical Optics** publishes this special issue, on his 60th birthday, to celebrate the outstanding contributions and achievements of Prof. Anjan Biswas.

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