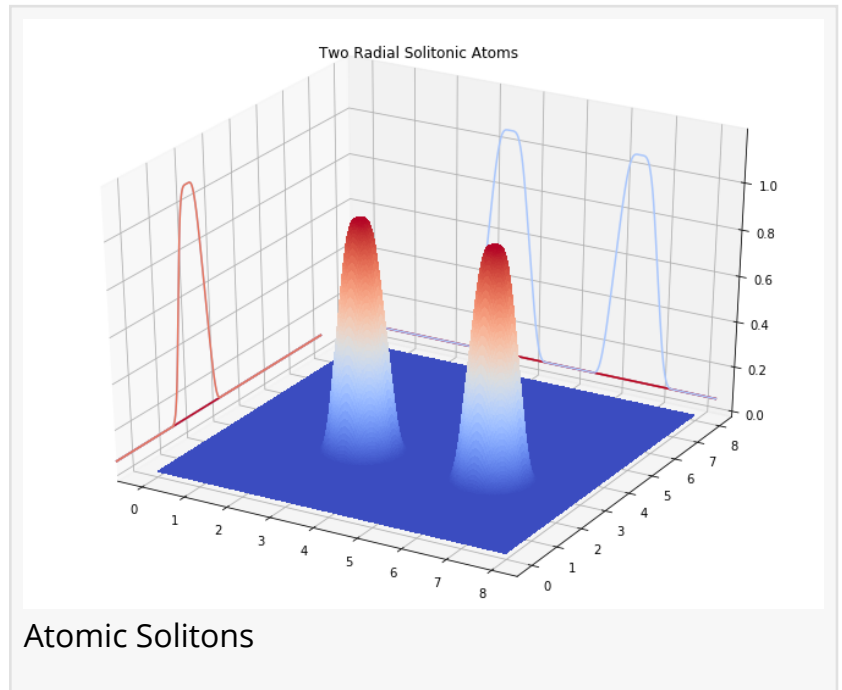


Professor Sergei Eremenko explores new Atomic Solitons

Professor Sergei Eremenko, PhD, Doctor of Engineering, Honorary Professor proposes new kind of mathematical solitons called Atomic Solitons

SYDNEY, NEW SOUTH WALES, AUSTRALIA, February 8, 2021 /EINPresswire.com/ -- [Sergei Eremenko](#), an Australian-Ukrainian scientist and author of three books, PhD, Doctor of Engineering, Professor, Honorary Professor of the National Aerospace University "Kharkiv Aviation Institute", formerly one of the youngest professors in the world holding both an academic title and a position of a Professor, proposes new class of mathematical solitons called Atomic Solitons.



SOLITONS IN PHYSICS and NATURE:

Solitons are magnificent nonlinear energy localization phenomena of nature and life. Solitons play an essential role in many branches of physics, cosmology, electronics, biology, life sciences, and mathematics. Discovered experimentally in 1834 by John Scott Russell and originally named as 'translation wave', the [soliton](#) traditionally was associated with stand-alone wave which, due to remarkable stability and particle-like behavior, can travel long distances uninterrupted. But later scientists discovered many new solitons and related quasi-solitonic effects. Now, the term 'soliton' assumes the large group of versatile nonlinear localization phenomena relevant to many physical and nonphysical theories discussed in this book.

'[SOLITON NATURE](#)' BOOK and VIDEO CHANNEL:

Professor Sergei Eremenko has recently published the book 'Soliton Nature' <https://www.amazon.com/gp/product/1951630777> which uses beautiful photography and videos

collected for many years to simply describe captivating stand-alone ocean waves, unusual bores, scary tsunamis, freaky rogue waves, and other solitonic phenomena which exist not only in oceans but also in brain neural networks, blood pressure pulses, and optical internet cables. Solitonic vortices will be presented by twisters, tornados, surfing tubes, fire whirls, and rotating galaxies. Picturesque envelope waves, with legendary 'The Ninth Wave' in the middle, highlight the tendency of nature to form group envelope soliton waves observable in oceans, lakes, sands, clouds, and as we propose, in wavy shapes of mountain ranges. Square grid waves are examples of multi-dimensional solitons. Soliton dislocations – missing atoms and topological defects capable of grouping and producing plasticity effects – are widespread in metal shapes around us. Solitonic energy localizations appear in large pendulum swings and swing movements of humans perfected them in many sports and dances.

Welcome to visit the book web site www.solitonnature.com, book trailer is https://youtu.be/cZMZdW_3J8 and Video Channel <https://www.youtube.com/watch?v=2lABLplcevo>

SOLITONS IN MATHEMATICS

Mathematically, solitons are described by nonlinear differential equations, with dozens of mathematical solitons discovered <https://en.wikipedia.org/wiki/Category:Solitons>.

ATOMIC SOLITONS

In 2017, professor Sergei Eremenko discovered that so-called Atomic Functions (AF) developed since 1970s by followers of author's teacher Academician NAS of Ukraine V.L. Rvachev, possess properties of mathematical solitons. But they are solitons of a new kind - because satisfy very special previously unexplored nonlinear differential equations with 'shifted arguments'. But detailed analysis of a pulse-like Atomic Function has shown that it is actually a composite object composed from two simpler functions named AStrings - which are true solitons called AString kinks. Atomic Function pulse then is a 'solitonic atom' made of two AString kinks. Both AF and AStrings are the new kind of previously unexplored solitons.

Atomic Solitons, first discovered in Sergei Eremenko's 2018 paper, has received many recommendations on ResearchGate scientific network [https://www.researchgate.net/publication/329455498 Atomic solitons as a new class of solitons](https://www.researchgate.net/publication/329455498_Atomic_solitons_as_a_new_class_of_solitons).

ASTRING SPACETIME QUANTA AND ATOMIC SOLITONS IN FIELD THEORIES:

Interestingly, Atomic Solitons can be used in many theories of mathematical physics, for example, to describe spacetime quanta and other mathematical 'building blocks' of field theories, like Higgs bosons coined 'The God Particles'. These new mathematical solitons possess a unique set of properties – solitariness, ability to compose 'solitonic atoms' representing quanta,

and represent different fields including spacetime continuum via superposition of quanta. This idea is described in S. Eremenko's 2017 paper 'Atomic Strings and fabric of spacetime' <https://www.researchgate.net/publication/320457739>, where AString function was first introduced.

ATOMIC SOLITONS PROJECT on RESEARCHGATE:

There are two ResearchGate projects dedicated to this theory:

<https://www.researchgate.net/project/Atomic-String-and-Atomic-Function-New-Soliton-Candidates>,

<https://www.researchgate.net/project/Atomic-Strings-Quantum-of-Spacetime-and-Gravitation>.

Computer source code repositories for AStrings and Atomic functions:

- <https://notebooks.azure.com/Soliton/projects/AtomicString1>
- <https://solitonscientific.github.io/AtomicSoliton/AtomicSoliton.html>
- <https://solitonscientific.github.io/AtomicString/AtomicString1.html>.

ATOMIC SOLITONS AND OTHER SOLITONS ARE DESCRIBED IN THE BOOK 'SOLITON NATURE'

To acquire the book, contact the author or search 'Soliton Nature' in :

- Amazon US <https://www.amazon.com/gp/product/1951630777>,
- Amazon UK <https://www.amazon.co.uk/Sergei-Eremenko/e/B082F3MQ4L>,
- Amazon Germany <https://www.amazon.de/Sergei-Eremenko/e/B082F3MQ4L>,
- Amazon France <https://www.amazon.fr/Soliton-Nature-Discover-Beautiful-Channel/dp/1951630777>,
- Google Electronic Books https://books.google.com.au/books/about/Soliton_Nature.html?id=d2zNDwAAQBAJ,
- Kindle eBooks of your country, like <https://www.amazon.com/Soliton-Nature-Discover-Beautiful-Channel-ebook/dp/B082B5PP6R>.
- Book web site www.solitonnature.com

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- Amazon Authors <https://www.amazon.com/Sergei-Eremenko/e/B082F3MQ4L>.
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