

Recent studies on nonlinear dynamics of microtubules and DNA

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Nonlinear dynamics of two biomolecules is studied. These are a microtubule (MT) and DNA molecule [1,2]. Two mathematical procedures are explained, yielding to three kinds of solitary waves moving through the systems. These waves are modulated solitary waves called breathers, kinks, and bell-type solitons. Regarding DNA, it is shown that a demodulated standing soliton could be crucial for the DNA-RNA transcription [3]. Finally, it is shown that the subsonic waves are stable in MTs, while supersonic ones are not [4].

References

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- [4] D. Ranković and S. Zdravković, Two component model of microtubules –subsonic and supersonic solitary waves, Chaos Soliton Fract. 164, 112693 (2022)

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