

Nonlinear Schroedinger equation in three spatial variables

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Abstract

Smooth analytical solutions are found for the nonlinear Schrödinger equation in the form of solitary waves for the case of three spatial variables. The phenomenon of optical self-focusing is considered.

Keywords: Schroedinger equation, optical self-focusing.

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References

- [1] Takhtadzhyan LA, Faddeev LD. The Hamiltonian method in the theory of solitons [In Russian]. Moscow: Nauka Publisher, 1986.
- [2] Dodd RK, Morris HC, Eilbeck JC, Gibbon JD. Soliton and nonlinear wave equations. London, New York: Academic Press Inc; 1982.
- [3] Newell AC. Solitons in mathematics and physics. Philadelphia, PA: Society for Industrial and Applied Mathematics; 1985.
- [4] Rajaraman R. Solitons and instantons: An introduction to solitons and instantons in quantum field theory. New York: Elsevier Science BV; 1982.
- [5] Stepanov VV. Course of differential equations. Moscow: State Publishing House of Technical and Theoretical Literature; 1953.
- [6] Landau LD, Lifshitz EM. Electrodynamics of continuous media. 2nd ed. Oxford: Pergamon Press Ltd; 1984.
- [7] Alimenkov IV. Exactly solvable mathematical models in nonlinear optics. Computer Optics 2005; 28: 45-54.