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On the existence of standing waves for a Davey-Stewartson system. (English) Zbl 0762.35109

Commun. Partial Differ. Equations 17, No. 5-6, 967-988 (1992).

Summary: We consider the standing waves for the Davey-Stewartson system

$$iu_t + \Delta u = a|u|^{\alpha}u + b_1 u v_{x_1}, \quad -\Delta v = b_2(|u|^2)_{x_1}$$

in $\mathbb{R}^2$ and $\mathbb{R}^3$. By reducing this system to a single nonlinear equation of Schrödinger type, we study the existence, the regularity and asymptotics of ground states.

MSC:

35Q55 NLS equations (nonlinear Schrödinger equations)
35Q35 PDEs in connection with fluid mechanics
35B65 Smoothness and regularity of solutions to PDEs
35B10 Periodic solutions to PDEs

Keywords:

variation method; regularity; asymptotics of ground states

Full Text: DOI

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