TRUDY INSTITUTA MATEMATIKI I MEKHANIKI UrO RAN

Vol. 21 No. 1 **2015**

ASYMPTOTICS OF AN AUTORESONANCE SOLITON

O. M. Kiselev

Received December 10, 2014

Phase locking is studied in a one-dimensional medium under the action of an external force with slowly changing frequency. In a typical situation, the phase locking is described by a nonstationary nonlinear Schrödinger equation with external force. For large values of the time variable, the leading term of a space-localized growing asymptotic solution with soliton profile in the principal order is constructed. It turned out that a time-growing asymptotic solution can be obtained for an external perturbation with decreasing magnitude. Necessary growth conditions are deduced for such a solution under dissipation.

Keywords: autoresonance, phase locking, soliton.

O. M. Kiselev Dr. Phys.-Math. Sci., Institute of Mathematics with Computer Center of Russian Academy of Sciences, Ufa, 450008 Russia, e-mail: olegkiselev@matem.anrb.ru.

Cite this article as:
O. M. Kiselev, Asymptotics of an autoresonance soliton, *Tr. Inst. Mat. Mekh. UrO RAN*, 2015, vol. 21, no. 1, pp. 128–136 .