Orbital stability of a chain of dark solitons for general nonintegrable Schrödinger equations with non-zero condition at infinity

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We consider travelling wave solutions for a general nonlinear Schrödinger equation

$$i\partial_t \Psi + \partial_x^2 \Psi + \Psi f(|\Psi|^2) = 0 \quad \text{on } \mathbb{R} \times \mathbb{R}, \tag{NLS}$$

when the condition at infinity is $|\Psi(t,x)| \to 1$, as $|x| \to \infty$. More precisely, we prove the orbital stability of a chain of travelling waves whose speeds are well ordered, taken close to the speed of sound c_s and such that the solitons are initially localized far away from each other. The proof relies on the arguments developed by F. Béthuel, P. Gravejat and D. Smets and first introduced by Y. Martel, F. Merle and T.-P. Tsai.