

1067-35-1072

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Bifurcation problem of the discrete nonlinear Schrödinger equations with sign changing nonlinearity. Preliminary report.

In this talk we will present our recent results on the bifurcation phenomenon of the discrete Schrödinger equation with unbounded potentials. For the case of self-focusing and defocusing nonlinearity all eigenvalues of Schrödinger operator are bifurcation points and our estimates near the bifurcation points are optimal for the linking solutions. For the case of sign changing nonlinearity we can only obtain the bifurcation estimate near the first eigenvalue of Schrödinger operator. (Received September 17, 2010)