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Numerical simulation of solitary waves behavior to nonlinear Schrödinger equation outside an obstacle.

We study solutions to the $2d$ focusing NLS equation in the exterior of an obstacle, which we take to be a disk, with Dirichlet boundary conditions and show are numerical simulations. We discuss the interaction between solitary waves travelling with different velocities towards the obstacle with different angles and show how the obstacle changes the overall behavior of solutions. Our numerical study assist theoretical proofs of the existence of blow-up solutions to the NLS equation in the exterior of the smooth, compact and convex obstacle of R^d , with negative energy. (Received September 21, 2021)