

**SCATTERING FOR SOLUTIONS OF NLS IN THE EXTERIOR
OF A 2D STARSHAPED OBSTACLE**

I shall present a joint work with F. Planchon. We prove that solutions to the quintic non-linear Schrödinger equation in two dimensions and in the exterior of a bounded and star-shaped obstacle scatter if the non-linear potential is defocusing. The key point is a new bilinear a-priori estimate that involves Sobolev spaces of fractional order. The Sobolev spaces are built using the Dirichlet laplacian. Then, Harmonic Analysis techniques are used in order to conclude classical Strichartz estimates.