BLOW-UP DYNAMICS FOR THE SELF-DUAL CHERN-SIMONS-SCHRDINGER MODEL

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The self-dual Chern-Simons-Schrdinger model is a gauged cubic NLS on the plane with self-duality, i.e., energy minimizers are given by a first-order Cauchy-Riemann-type equation, rather than a second-order elliptic equation. While this equation shares all formal symmetries with the usual cubic NLS on the plane, the structure of solitary waves is quite different due to self-duality. As a result, this model possesses a blow-up dynamics that is quite different from that of the usual cubic NLS. In this talk, after providing a survey of recent results on this topic, I will present my recent joint work with Kihyun Kim (KAIST) and Soonsik Kwon (KAIST), in which we construct first examples of smooth compactly supported initial data with L^2-norm arbitrarily close to the ground state solution that lead to solutions blowing up in finite time, as well as those blowing up in infinite time.