1173-35-320 **Svetlana Roudenko*** (sroudenko@fiu.edu), Department of Mathematics and Statistics, Florida International University, Miami, FL 33199. *Solitary waves in fractional KdV-type equations.* Preliminary report.

The Korteweg - de Vries (KdV) equation $u_t + (u_{xx} + 3u^2)_x = 0$, a model that describes shallow water waves, has traveling wave solutions, called solitary waves, or solitons, which have been observed experimentally back in 1834 and studied since late 1800s. In 1960s the inverse scattering transform was introduced to study solutions of KdV, and in particular, show that a sufficiently fast decaying solution will eventually split into a sum of traveling to the right solitons and an oscillatory decaying part traveling to the left ("soliton resolution conjecture"). Various generalizations of KdV with different power nonlinearities (gKdV) have also been studied and in the so-called subcritical cases of gKdV stability of solitons was shown. In the critical and supercritical cases of gKdV it is known that solitary waves are not stable and they lead to formation of singularities, or so-called blow-up solutions.

If the dispersion operator ∂_{xx} in KdV is replaced with the fractional derivative D^α, the equation is referred to as the fractional gKdV equation; it also has traveling wave solutions. In this talk we explore the question of solitary waves and their stability in this fractional setting. (Received September 22, 2021)