

The gradient flow of O'Hara's knot energies

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In 1991 Jun O'Hara invented a whole family of functionals on the space of embedded curves in order to find nice representatives in a given knot class the most prominent of which is the so called Möbius energy.

In this talk we will discuss the L^2 -gradient flow of some of these functionals which lead to a parabolic equation of fractional order between 3 and 4. These equations possess a quasilinear structure which allows us to derive short time existence results.

Using energy estimates, we will see that in the two cases that a multiple of the length is added to the energy or the length is fixed as a constrained we obtain long time existence and sub-convergence to stationary points of the energy functional.