1051-35-250 **Dirk Hundertmark\*** (`dirk@math.uiuc.edu`), Department of Mathematics, Altgeld Hall, 1409 W Green Street, Champaign, IL 61801. *Exponential decay of dispersion management solitons.*

The propagation of pulses through a dispersion managed glass fiber cable is described by a non-local version of the non-linear Schrödinger equation. This equation has been extensively studied numerically and on the level of theoretical physics due to its enormous practical relevance in the modeling of signal-transfer through ultra-high speed glass-fiber cables, but rigorous results are rare. This is mainly due to the non-local nature of this equation which makes it hard to study. As a test: if one googles 'dispersion management' one gets an overwhelming amount of hits (ca 551,000 on google scholar at the moment, much more on plain google) but only very few are rigorous (I know of 6).

We describe very recent work on the decay and regularity properties of solitary solutions, the so-called dispersion management solitons. Our results include a simple proof of existence, regularity, and, most recently, a proof of exponential decay of dispersion management solitons. The main tool for the proof of exponential decay are exponentially weighted multi-linear estimates. This is joint work with Burak Erdoğan and Young-Ran Lee. (Received August 25, 2009)