SYMMETRIC APPROXIMATIONS TO NONLINEAR DISPERSIVE EQUATIONS IN NON-SMOOTH REGIMES

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This talk deals with the numerical approximation to nonlinear dispersive equations, such as the prototypical nonlinear Schrödinger equation. We introduce novel integration techniques allowing for the construction of schemes which perform well both in smooth and non-smooth settings. We obtain symmetric low-regularity schemes with very good structure preserving properties over long times.

Higher order extensions will be presented, following new techniques based on decorated trees series inspired by singular stochastic PDEs via the theory of regularity structures.