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SALZBURG MATHEMATICS COLLOQUIUM
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„Low regularity time integration of dispersive problems“

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Abstract: Standard numerical integrators, such as Lie splitting, Strang splitting, and exponential integrators, experience order reduction when applied to semilinear dispersive problems with non-smooth initial data. To address this issue, a recent development introduces a new class of integrators known as low-regularity integrators. These integrators use the variation-of-constants formula and employ resonance-based approximations in Fourier space, demonstrating improved convergence rates at low regularity. However, the estimation of nonlinear terms in the global error still relies on classical bilinear estimates derived from Sobolev embeddings. At very low regularity, traditional error analysis in Sobolev spaces is hampered by the lack of suitable embeddings. A novel framework, inspired by Bourgain's techniques, has been developed that allows the analysis of methods applicable to very low regularity initial data. This approach has been applied to various problems, including the nonlinear Schrödinger equation.

Thursday, **15:00-15:45**
Hörsaal 414, 1. Stock

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