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DK Seminar

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University of Vienna,
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On the full dispersion Davey-Stewartson system

The full system of PDEs modeling water waves system is too complex to be used for the description of long time dynamics of waves. Hence a well known procedure is used to derive simpler asymptotic models in various regimes, of wavelengths, amplitudes,... Our starting point of the analysis is the Zakharov-Craig-Sulem formulation of the water waves problem. Then one has to find suitable non-dimensional small parameters which allow to perform approximations of the nonlocal operator which appears in that formulation. The modulation regime where the relevant small parameter is the wave steepness, leads to Schrödinger type equations or systems, in particular to the Full Dispersion Davey-Stewartson systems (FDDS). In this talk, I will present the derivation of that system briefly, the difficulties to solve the Cauchy problem and our recent results on it.