Max-Born-Institut

Institutskolloquium

Am Mittwoch, **23. Juni 2004 um 16:00 Uhr** spricht:

Prof. Dr. David J. Kaup
University of Central Florida
Orlando, Florida, USA

über

"Three-wave solitons and continuous waves in media with competing quadratic and cubic nonlinearities"

Two well known nonlinear interactions are second harmonic generation (SHG) and Kerr nonlinearities. There are known situations in which these two interactions can compete with diffraction, achieving a balance resulting in a solitary wave (also called solitons). Solitary waves generated from Type I SHG competing with Kerr nonlinearities have been known for some time. Type II SHG competing with Kerr nonlinearities has been little studied, since it is a more complex system, wherein the solitary waves are the stationary solutions of a twelfth-order system of ordinary differential equations. Experiments on media which have a Type II SHG and a significant competing Kerr nonlinearity have just recently been done. Our purpose in this study is two-fold: First, we want to design techniques for locating, in a complex system, regions of parameter space in which one could expect to find soliton solutions. Second, we want to use these techniques to explore the nature of solitary wave solutions in realistic materials which contain competing Type II SHG and Kerr nonlinearities. We will discuss our results from this investigation, show examples of the solitary waves found and discuss their stability properties.

Ort: Max-Born-Saal, MBI, Max-Born-Str. 2a

Interessenten sind herzlich eingeladen.

Prof. Dr. W. Sandner