



PHYSIKALISCHES KOLLOQUIUM

EINLADUNG

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spricht

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über

„Freakwaves: from two-dimensional electron gases to economics“

Waves propagating through an inhomogeneous medium produce patterns irregular in space and time. Assuming a random superposition of plane waves, Lord Rayleigh predicted the probability distribution of wave heights a century ago; however, Rayleigh's law considerably underestimates the probability for extraordinarily high waves in the sea. Reliable knowledge of the frequency of these freak events is clearly of uttermost practical importance. The common explanation is based on nonlinearity, but stationary imaging of electron flow in a random potential suggests that such deviations may already be present and significant in the linear regime. Here we show in a study of both stationary wave fields and transient transport of microwaves through an arrangement of randomly distributed scatterers that huge deviations from Rayleigh's law do exist, which cannot be described by existing multiple-scattering theories. Thus, an understanding of the linear regime is essential for the proper interpretation of freak waves.

Einladender: J. Peinke