On the equilibrium of the generalized Phillips' spectra

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A generalization of the kinetic equation by Newell and Zakharov (2008) is used for explaining observed shapes of wind wave spectra. The approach uses a trivial condition of equilibrium of nonlinear transfer and heavily nonlinear wave dissipation due to breaking of relatively short and steep waves. It is shown that this equilibrium is not possible for arbitrary dissipation rates. The 'special' rate corresponding to the classic Phillips spectrum $E \sim \omega^{-5}$ (Phillips, 1958) is specified both analytically and in simulations (Badulin and Zakharov, 2012).

References

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