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## Interaction of shallow-water solitons as a possible model for freak waves (joint work with J Engelbrecht)

Nonlinear interactions of solitonic waves in the framework of the Kadomtsev-Petviashvili equation may result in particularly high wave humps resembling the phenomena occurring during the Mach reflection of solitary waves. For the limiting case of interactions of perfect solitons, the extreme heights, slopes and many other properties of these humps can be estimated analytically. Surface elevation up to four times as high as the amplitude of the counterparts occurs if their amplitudes, the angle between their crests and the water depth are specifically balanced. The slope of the front of the high hump may be eight times as large as the maximum slope of the fronts of the interacting waves. Although such a balance occurs seldom, the resulting structure may persist for a long time until the balance is violated. This mechanism does not become evident in deep water by it may be a generic source of abnormally high and steep waves in areas of moderate depth.

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