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Sarbarish Chakravarty* (schakrav@uccs.edu), Austin Bluffs Pkwy, Colorado Springs, CO 80918. *Inverse problem: construction of KP soliton solutions from wave patterns.*

In this talk we will discuss how to construct an (approximate) solution of the KP equation from a given pattern of small amplitude, long wavelength and primarily unidirectional waves. This can be regarded as an "inverse problem" in the sense that by measuring the angles and locations of the solitary waves in the given pattern with respect to a fixed reference frame it is possible to determine the data necessary to reconstruct the tau-function associated with the KP line-soliton solution. In the talk, we illustrate the inverse problem by taking an explicit example of shallow water wave pattern. (Received February 09, 2013)