APCTP SEMINAR

Completely resonant collision of lumps and line solitons in the Kadomtsev-Petviashvili I equation

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Online via ZOOM

A particular type of resonant collisions between lumps and line solitons called as completely resonant collisions are investigated. The usual lump is a stable weakly localized two-dimensional (2D) soliton, which keeps its shape and velocity in the course of the evolution from t → −∞ to t → +∞. However, the lumps in the completely resonant collisions with line solitons would become localized in time and in two-dimensional space as 'instantons', which first detach from the line soliton and then rapidly fuses into the other line soliton after appearing on the constant background for a very transient period of time. Since these doubly localized lumps possess the key features of two-dimensional rogue waves in physical settings, thus they are call as 'rogue lumps' and are valuable in modelling physical problems.

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