

# SIDE 14.2



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## The singularity structure of the discrete KdV and mKdV equations

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### Content :

Although the notion of singularity confinement was first introduced for the discrete KdV (dKdV) equation, as of yet there is still no rigorous definition of the notion of 'confinement' for lattice equations. In fact, somewhat ironically, it has taken nearly 30 years before an exhaustive study of the singularities of the dKdV equation finally revealed their intriguing properties and the full richness of the singularity structures they produce.

In this talk I will explain the basic classification of singularities for the dKdV and mKdV equations, which involves a novel 'strip-like' type of singularity. These strips or bands can interact with the singularities of other types, producing singularity patterns of increasing complexity. Moreover, I will show that the interaction of these singularities with a particular type of singularity can be described using a special symbolic dynamics which turns out to be equivalent to the Takahashi-Satsuma Box dynamics.

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