

Involutive scroll structures and heavenly type hierarchies

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A rational normal scroll structure on an $(n+1)$ -dimensional manifold M is defined as a field of rational normal scrolls of degree $n-1$ in the projectivised cotangent bundle PT^*M . Geometry of this kind naturally arises on solutions of various 4D dispersionless integrable hierarchies of heavenly type equations. In this context, rational normal scrolls coincide with the characteristic varieties (principal symbols) of the hierarchy. Furthermore, such structures automatically satisfy an additional property of involutivity. Our main result states that involutive scroll structures are themselves governed by a dispersionless integrable hierarchy, namely, the hierarchy of conformal self-duality equations. (Based on joint work with B. Kruglikov)