

Soliton Equations, Frobenius Manifolds and Feynman Graphs

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Abstract

A Frobenius algebra is a commutative, associative algebra with a compatible inner product. There is a natural multilinear generalization called a Frobenius manifold. Examples arise in the study of soliton equations, enumerative geometry, and the topology of spaces of complex surfaces. We will explain what Frobenius manifolds are and how they can be understood in terms of graphs satisfying certain relations arising from topology. These graphs bear a striking resemblance to Feynman graphs from quantum field theory.