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11. Mathematical Physics

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Integrability in higher dimensions

The most general construction of integrable equations in $2+1$ discrete dimensions and their solutions seems to be using some kind of *functional tetrahedron equation* and its algebro-geometric solutions. In the talk, some underlying general constructions (involving e. g. abelian categories), as well as recent developments and generalizations of this idea are discussed, including generalizations to $3+1$ dimensions. Part of these results is joint work with R. M. Kashaev and S. M. Sergeev.

Reference: R. M. Kashaev, I. G. Korepanov and S. M. Sergeev, Functional Tetrahedron Equation, `solv-int/9801015`, accepted for publication in *Theor. Math. Phys.* (1998).