

Talk 12, 9:50–

**Static correlation functions of the
anisotropic Heisenberg chain
– multiple integrals and their factorization –**

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Expectation values of local operators acting on n consecutive sites of the Heisenberg XXZ chain can be expressed as sums over n -fold integrals. This was shown some time ago by Jimbo et al. for the ground state of the infinite chain and later successively generalized to finite magnetic field, to finite temperature and, more recently, to the ground state of finite length chains. It is remarkable that the form of the multiple integrals for the basic density matrix is in all cases the same. The physical parameters (length, temperature, magnetic field) enter only implicitly through a so-called auxiliary function which must be determined as a solution of a well-known non-linear integral equation. I illustrate with examples that in all cases the multiple integrals can be factorized into sums over products of single integrals and that the factorized form of the correlation functions is efficient for the high-precision numerical computation of correlation functions at short distances.