Dmytro Volin (Penn State University) String hypothesis for GL(N|M) spin chains: a particle/hole democracy

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We discuss integrable GL(N|M) spin chains in the thermodynamic limit and in the regime when string hypothesis is valid. Remarkably, derived from the Bethe Ansatz linear integral equations can be rewritten in a symmetrical way that treats equivalently the density of string configurations and the density of holes for string configurations.
The symmetrical integral equations are suitable for any kind of particle/hole transformations and therefore for construction of the field theories obtained in the continuous limit of spin chains. Also, the symmetrical integral equations immediately suggest the structure of the Y-system which is defined in a general situation on a T-hook domain.
The discussion is valid for arbitrary choice of a Kac-Dynkin diagram of the gl(n|m) symmetry algebra and for spin chains with all cites being in the same representation of the so called rectangular type.
One can construct a bijection between possible string configurations and rectangular representations. The origin for this bijection is not clear.

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