3d Ising:

$$W = \begin{pmatrix} \sqrt{\cosh \beta} & \sqrt{\sinh \beta} \\ \sqrt{\cosh \beta} & -\sqrt{\sinh \beta} \end{pmatrix}$$

$$T_{ijklmn} = W_{ai} W_{aj} W_{ak} W_{al} W_{am} W_{an}$$

3d XY or O(2) model:

cond-mat/9305020

Use $e^{\beta \cos \theta} = \sum_{n=-\infty}^{\infty} I_n(\beta) e^{in\theta}$

$$T_{lrudfb} = \sqrt{I_l(\beta) I_r(\beta) I_u(\beta) I_d(\beta) I_f(\beta) I_b(\beta)} \; \mathcal{A}$$

where,

$$\mathcal{A} = I_{l+u+f-r-d-b}(\beta h) \quad \left. \begin{cases} l,r,u,d,f,b \\ \text{goes from} \\ -D \cdots 0 \cdots D \end{cases} \right.$$

3d U(1) model:

$$T_{ijklmn} = \sum_{a=-\infty}^{\infty} L_{ai} L_{aj} L_{ak} L_{al} L_{am} L_{an}$$

where

$$I_{n-n'}(\beta) = A_{nn'} = \sum_{\alpha=-\infty}^{\infty} L_{n\alpha} L_{\alpha n'}^{T}(\beta)$$

hep-lat/1811.05884

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