

## EXAMPLE : XXZ

### COMMUTATION RELATIONS

$$\mathcal{A}(z)\mathcal{B}(z_1) = \frac{\sinh(\eta)}{\sinh(z-z_1)}\mathcal{B}(z)\mathcal{A}(z_1) + \frac{\sinh(z-z_1-\eta)}{\sinh(z-z_1)}\mathcal{B}(z_1)\mathcal{A}(z)$$

$$\mathcal{D}(z)\mathcal{B}(z_1) = -\frac{\sinh(\eta)}{\sinh(z-z_1)}\mathcal{B}(z)\mathcal{D}(z_1) + \frac{\sinh(z-z_1+\eta)}{\sinh(z-z_1)}\mathcal{B}(z_1)\mathcal{D}(z)$$

### UNWANTED TERMS

$$\mathcal{U}_i^{(\mathcal{A})} = \sinh^L(z_i + \eta) \frac{\sinh \eta}{\sinh(z - z_i)} \prod_{k \neq i}^m \frac{\sinh(z_i - z_k - \eta)}{\sinh(z_i - z_k)}$$

$$\mathcal{U}_i^{(\mathcal{D})} = -\sinh^L(z_i) \frac{\sinh \eta}{\sinh(z - z_i)} \prod_{k \neq i}^m \frac{\sinh(z_i - z_k + \eta)}{\sinh(z_i - z_k)}$$

### BETHE EQUATIONS

$$\left( \frac{\sinh(z_i + \eta)}{\sinh z_i} \right)^L = \prod_{k \neq i}^m \frac{\sinh(z_i - z_k + \eta)}{\sinh(z_i - z_k - \eta)}$$

### EIGENVALUE OF THE TRANSFERT MATRIX

$$\Lambda(z, \{z_i\}) = \sinh^L(z + \eta) \prod_{i=1}^m \frac{\sinh(z - z_i - \eta)}{\sinh(z - z_i)} + \sinh^L(z) \prod_{k=i}^m \frac{\sinh(z - z_i + \eta)}{\sinh(z - z_i)}$$