

Q global number field

$$Q \xrightarrow[\text{infinite place}]{\sigma} \mathbb{C}$$

$$\underline{Q} = \underline{\mathbb{Q}} \langle \sigma \mathbb{1} : \sigma \in d \rangle$$

$$\mathbb{C} \supset \underline{Q}^\tau \ni \sigma \mathbb{1}^\tau$$

$$x \in \mathbb{R}_{>}^d \text{ diag}$$

$$\sigma \tau \underline{\mathbb{1} x \mathbb{1}^*} = \underline{\mathbb{1}^\sigma x_{\rho^\sigma} \mathbb{1}^{\tau^\sigma}} = \sigma \mathbb{1}^\sigma x_{\rho^\sigma} \tau \mathbb{1}^\sigma$$

$$\mathbb{1} \bar{\mathbb{1}} \underline{\mathbb{1} x \mathbb{1}^*} = \underline{\mathbb{1} \mathbb{1} x \mathbb{1}^*} = \mathbb{1}^\sigma \sigma \mathbb{1}^\sigma x_{\rho^\sigma} \tau \mathbb{1}^\sigma \bar{\mathbb{1}}^\tau = x_{\rho^\sigma} \sqrt{\frac{2}{\mathbb{1}^\sigma \sigma \mathbb{1}^\sigma}}$$

$$\mathbb{1} \mathbb{1}^* \underline{\mathcal{E}_x} = \mathcal{E}^{-\mathbb{1} \bar{\mathbb{1}} \underline{\mathbb{1} x \mathbb{1}^*}} = \mathcal{E}^{-x_{\rho^\sigma} \sqrt{\frac{2}{\mathbb{1}^\sigma \sigma \mathbb{1}^\sigma}}}$$

$$\mathbb{1} \mathbb{1}^* \underline{\mathcal{E}_x} = \sum_{\mathbb{1}}^Q \mathbb{1} \mathbb{1}^* \underline{\mathcal{E}_x}$$

$$\mathbb{1} \mathbb{1}^* \underline{\mathcal{E}_x} = \zeta_s = \int_{\mathbb{R}_{>}^d} x^{s/2} \mathbb{1} \mathbb{1}^* \underline{\mathcal{E}_x}$$