

$$\langle \sigma_i, \sigma_j \rangle + \langle \sigma'_i, \sigma'_j \rangle = 2 \cos \left(\frac{\theta_i + \theta'_i}{2} - \frac{\theta_j + \theta'_j}{2} \right) \cos \left(\frac{\theta_i - \theta'_i}{2} - \frac{\theta_j - \theta'_j}{2} \right).$$