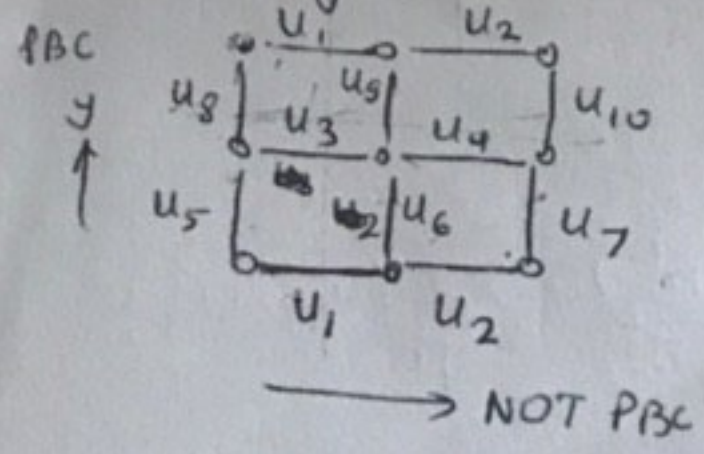
oWinding #



$$H = -J\left[u_1 u_2 u_3^\dagger u_5^\dagger + u_5 u_3 u_2^\dagger u_1^\dagger + u_2 u_7 u_4^\dagger u_6^\dagger + u_6 u_4 u_7^\dagger u_2^\dagger + u_3 u_9 u_1^\dagger u_8^\dagger + u_8 u_1 u_9^\dagger u_3^\dagger + u_4 u_{10} u_2^\dagger u_9^\dagger + u_9 u_2 u_{10}^\dagger u_4^\dagger\right]$$

$$W_x = E_1 + E_3 + E_2 + E_4$$

$$W_y = E_5 + E_6 + E_7 + E_8 + E_9 + E_{10}$$

$$V_x = e^{i\theta W_x}$$

$$H' = V_x^\dagger H V_x = H$$

$$[W_x, H] = 0$$

$$[E, u] = u$$

$$[E, u^\dagger] = -u^\dagger$$

$$S = S^+ - S^y - S^z$$

$$u = S^x$$

$$u^\dagger = S^-$$

$$E = S^z$$

$$u_1 u_2 u_3^\dagger u_5^\dagger - u_5 u_3 u_2^\dagger u_1^\dagger - u_3 u_9 u_1^\dagger u_8^\dagger + u_8 u_1 u_9^\dagger u_3^\dagger - u_1 u_2 u_3^\dagger u_5^\dagger + u_5 u_3 u_2^\dagger u_1^\dagger$$

$$[W_y, H] = 0$$

$$W_y = E_5 + E_6 + E_7$$

$$-u_1 u_2 u_3^\dagger u_5^\dagger + u_5 u_3 u_2^\dagger u_1^\dagger$$