

Exercise 6.8. Do the same for the other two entangled triplet states,

$$|T_2\rangle = \frac{1}{\sqrt{2}} (|uu\rangle + |dd\rangle)$$

$$|T_3\rangle = \frac{1}{\sqrt{2}} (|uu\rangle - |dd\rangle)$$

and interpret.

See Eigenmath code.

For triplet state T_2 the expectation values are

$$\langle \sigma_z \tau_z \rangle = \langle T_2 | \sigma_z \tau_z | T_2 \rangle = 1$$

$$\langle \sigma_x \tau_x \rangle = \langle T_2 | \sigma_x \tau_x | T_2 \rangle = 1$$

$$\langle \sigma_y \tau_y \rangle = \langle T_2 | \sigma_y \tau_y | T_2 \rangle = -1$$

For triplet state T_3 the expectation values are

$$\langle \sigma_z \tau_z \rangle = \langle T_3 | \sigma_z \tau_z | T_3 \rangle = 1$$

$$\langle \sigma_x \tau_x \rangle = \langle T_3 | \sigma_x \tau_x | T_3 \rangle = -1$$

$$\langle \sigma_y \tau_y \rangle = \langle T_3 | \sigma_y \tau_y | T_3 \rangle = 1$$