ES-2

* $\sigma_1 = \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}$, $\sigma_2 = \begin{pmatrix} 0 & -i \\ i & 0 \end{pmatrix}$, $\sigma_3 = \begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix}$

sono le matrici di Pauli

- mostrare che

$$\sigma_1 \sigma_2 = -\sigma_2 \sigma_1 = i \sigma_3$$

$$\sigma_2 \sigma_3 = -\sigma_3 \sigma_2 = i \sigma_1$$

$$\sigma_3 \sigma_1 = -\sigma_1 \sigma_3 = i \sigma_2$$

- calcolare le matrici $e^{i\theta\sigma_k}$ $k = 1, 2, 3$

---

* $$A = \begin{pmatrix} \frac{1}{2} & 0 & \frac{1}{2} \\ 0 & 1 & 0 \\ \frac{1}{2} & 0 & \frac{1}{2} \end{pmatrix}$$

- calcolare A^2
- " gli autovalori
- calcolare e^{tA}

---

* $\underline{v}_1 = \begin{pmatrix} 1 \\ 1 \\ 0 \end{pmatrix}$, $\underline{v}_2 = \begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix}$, $\underline{v}_3 = \begin{pmatrix} 0 \\ 0 \\ 1 \end{pmatrix}$

- verificare che $\underline{v}_1, \underline{v}_2, \underline{v}_3$ sono indipendenti
- costruire la base ortonormale $\underline{e}_1, \underline{e}_2, \underline{e}_3$ usando Gram-Schmidt