# Number of qubits for Navier-Stokes from the cost function

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- From items 1-3 (7 qubits): $A_x^\dagger \mathcal{U}^v |0\rangle (A_x - \mathbf{1})\mathcal{U}^{\mathcal{L}} |0\rangle + A^\dagger \mathcal{U}^v |0\rangle \mathcal{U}^{\mathcal{L}} \mathcal{U}^f |0\rangle + 2A_x^\dagger v \mathcal{U}^{\mathcal{L}} \mathcal{U}^f |0\rangle + A_x^\dagger \mathcal{U}^{\mathcal{L}} \mathcal{U}^f |0\rangle - A_x^\dagger \widetilde{\lambda_0} \mathcal{U}^{\mathcal{L}} \mathcal{U}^f |0\rangle$
- From items 4-5 (4 qubits): $\mathcal{U}^{\Psi\widetilde{\Psi}} |0\rangle + (\mathcal{U}_v^\dagger |0\rangle)(\mathcal{U}^{\Psi\widetilde{\Psi}} |0\rangle) + 2v^\dagger (A_y + A_y^\dagger)(\mathcal{U}^{\Psi\widetilde{\Psi}} |0\rangle)$