# List of Symbols

| Symbol | Description |
|---|---|
| $\otimes$ | Kronecker product or tensor product |
| $^t$ | Transpose of a matrix or a vector. |
| $^\dagger$ | Conjugate transpose of a matrix or a vector. |
| $\mathbb{R}$ | Set of all real numbers. |
| $\mathbb{C}$ | Set of all complex numbers. |
| $\mathbb{C}^n$ | Complex Hilbert space of dimension $n$. |
| $G$ | Combinatorial graph. |
| $V(G)$ | Vertex set of the graph $G$. |
| $\|V(G)\|$ | Number of vertices in the graph $G$. |
| $E(G)$ | Edge set of the graph $G$. |
| $\|E(G)\|$ | Number of edges in the graph $G$. |
| $\hat{e}$ | Directed edge. |
| $e$ | Undirected edge. |
| $w_{uv}$ | Edge weight of the edge $(u, v)$. |
| $A(G)$ | Adjacency matrix of the graph $G$. |
| $d_v$ | Degree of the vertex $v$. |
| $D(G)$ | Degree matrix of the graph $G$. |
| $L(G)$ | Laplacian matrix of the graph $G$ |
| $Q(G)$ | Signless Laplacian matrix of the graph $G$ |
| $K(G)$ | Laplacian matrix of the graph $G$ in general. We use the symbol when the Laplacian or signless Laplacian matrix is not explicitly mentioned. |
| $\langle C_\mu \rangle_G$ | Induced subgraph of $G$ generated by the vertex set $C_\mu$. |
| $\langle C_\mu, C_\nu \rangle_G$ | Subgraph of $G$ generated by the vertex set $C_\mu \cup C_\nu$ and edges joining vertices in $C_\mu$ and $C_\nu$. |
| $\rho_l(G)$ | Density matrix corresponding to the graph $G$ with respect to $L(G)$. |
| $\rho_q(G)$ | Density matrix corresponding to the graph $G$ with respect to $Q(G)$. |
| $\rho(G)$ | Density matrix of the graph $G$ when the Laplacian or signless Laplacian matrix is not explicitly mentioned. |
| $\mathcal{H}$ | Hilbert space. |
| $\mathcal{H}^{(n)}$ | Hilbert space with dimension $n$. |
| $\mathcal{H}^{(n)} \otimes \mathcal{H}^{(m)}$ | Product Hilbert space of $\mathcal{H}^{(n)}$ and $\mathcal{H}^{(m)}$. |
| $\mathcal{H}_A$ | Hilbert space corresponding to the party $A$. |
| $\mathcal{H}_A^{(n)}$ | Hilbert space corresponding to the party $A$ with dimension $n$. |
| $\|\psi\rangle$ | Quantum state vector $\psi$. |
| $\langle\psi\|$ | Conjugate transpose of $\|\psi\rangle$. |
| $\langle\phi\|\psi\rangle$ | Inner product between $\langle\phi\|$ and $\|\psi\rangle$. |
| $\|\phi\rangle \langle\psi\|$ | Outer product between $\|\phi\rangle$ and $\langle\psi\|$. |
| $A = (a_{ij})_{m\times n}$ | Matrix $A$ of order $m \times n$ whose entries are $a_{ij}$. |
| $\Lambda(A)$ | Spectra of a matrix $A$. |
| $\Lambda(G)$ | Spectra of a graph $G$. |