## Gate + qubit\_count: int + basis size: int + dtype: type + eval bs(basis state: int): State + call (state: State): State + \_\_mul\_\_(gate: Gate): Gate + \_\_mul\_\_(gate: Gate): Gate + mulit\_gate(qubit\_count: int, gate: Gate, apply\_qubits: [int]): Gate + from\_eval\_bs(qubit\_count: int, \_eval\_bs: function): Gate + controlled gate(qubit\_count: int, gate: Gate, apply\_qubits: [int], control\_qubits[int]): Gate **MatrixGate FunctionalGate** init (qubit count: int, matrix) <u>init</u> (qubit\_count: int, <u>eval\_bs: function</u>)

## + amplitudes: np.ndarray

\_\_init\_\_\_(state:np.ndarray)

- + dtype: type
  - \_\_\_\_\_
- + norm(): float
  - omi(). iloat
- + is\_normalized(): bool
- + prob\_of\_bs(bs: int): float
  - sb of state(state)
- + prob\_of\_state(state: State): float
- + random\_measure\_bs(): int

(len)(): State

- + <u>from basis state</u>(bs: int): state
- ([])(bs: int): dtype
- (==)(state: State): bool
- (+)(state: State): State
- (-)(state: State): State
  - state: Stat
- (-)(): State
- (\*)(number: complex): State
  - (state: State): compley
- (\*)(state: State): complex

(/)(number: complex): State