



WORKING IN DIFFERENT BASES

I. 기초적인 방법

최만수 (고려대 물리학과)

MATRIX REPRESENTATION OF VECTORS

- Let $\{|v_1\rangle, |v_2\rangle, \dots, |v_n\rangle\}$ be the basis.
- $|\psi\rangle = |v_1\rangle c_1 + |v_2\rangle c_2 + \dots + |v_n\rangle c_n$
 $c_k = \langle v_k | \psi \rangle$

9편 참조

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$$|\psi\rangle \doteq \begin{bmatrix} c_1 \\ c_1 \\ \vdots \\ c_n \end{bmatrix}$$

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MATRIX REPRESENTATION OF OPERATORS

- Let $\{|v_1\rangle, |v_2\rangle, \dots, |v_n\rangle, \}$ be the basis.
- $\hat{A} = \sum_{ij} |v_i\rangle A_{ij} \langle v_j|$, $A_{ij} = \langle v_i | \hat{A} | v_j \rangle$

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MATRIX REPRESENTATION OF OPERATORS

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$$\hat{A} \doteq \begin{bmatrix} A_{11} & A_{12} & \cdots & A_{1n} \\ A_{21} & A_{22} & \cdots & A_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ A_{n1} & A_{n2} & \cdots & A_{nn} \end{bmatrix}$$

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감사합니다!