

$$\int_x^y \left( \exp \left( \frac{i\hbar}{2m} \partial_x^2 + \frac{V}{i\hbar} \right) \right)_x^r = \int_{d^1}^{x|y} \exp \frac{i}{\hbar} \int_{dt}^{r|s} \left( \frac{m}{2} \dot{\mathbf{1}}^2 - {}^t\mathbf{1}V \right)$$

$$A \subset \mathbb{R}^n$$

$$A: r < t_1 < \dots < t_n < s$$

$$t_0 = r: \quad t_{n+} = s$$

$$\mathbf{1} = \begin{pmatrix} 1 \\ \vdots \\ n \end{pmatrix} \in \mathbb{R}^n$$

$${}_0\mathbf{1} = x: \quad {}_{n+1}\mathbf{1} = y$$

$$r|s \xrightarrow[\text{path}]{\mathbf{1}} \mathbb{R}: \quad \int_{dt}^{r|s} \frac{m}{2} \dot{\mathbf{1}}^2 - {}^t\mathbf{1}V$$

$$\int_{d^1}^{x|y} \exp \frac{i}{\hbar} \int_{dt}^{r|s} \left( \frac{m}{2} \dot{\mathbf{1}}^2 - {}^t\mathbf{1}V \right) \underset{A}{\sim} \int_{d^1}^{\mathbb{R}^n} \exp \frac{i}{\hbar} \sum_j^{0|n} \left( \frac{m}{2} \frac{{}^{\mathbf{1}^2}_j \mathbf{1}}{t_{j+} - t_j} - \overline{t_{j+} - t_j} {}^{j+}\mathbf{1}V \right)$$

$$r|s \xrightarrow[\text{cl path}]{\mathbf{1}} \mathbb{R}: \quad m_{t^{\mathbf{1}}} = -{}^t\mathbf{1}V$$

$$\int_{dt}^{r|s} \frac{m}{2} \dot{\mathbf{1}}^2 - {}^t\mathbf{1}V$$

$$r|s \xrightarrow[\text{path}]{\mathbf{1}} \mathbb{R}: \quad {}^t\mathbf{1} = {}_t\mathbf{1} - {}_t\mathbf{1}$$

$$\frac{\int_{d^1}^{x|y} \exp \frac{i}{\hbar} \int_{dt}^{r|s} \left( \frac{m}{2} \dot{\mathbf{1}}^2 - {}^t\mathbf{1}V \right)}{\exp \frac{i}{\hbar} \int_{dt}^{r|s} \left( \frac{m}{2} \dot{\mathbf{1}}^2 - {}^t\mathbf{1}V \right)} = \int_{d^1}^{0|0} \exp \frac{i}{\hbar} \int_{dt}^{r|s} \left( \frac{m}{2} \dot{\mathbf{1}}^2 - {}^t\mathbf{1}V \right)$$

