

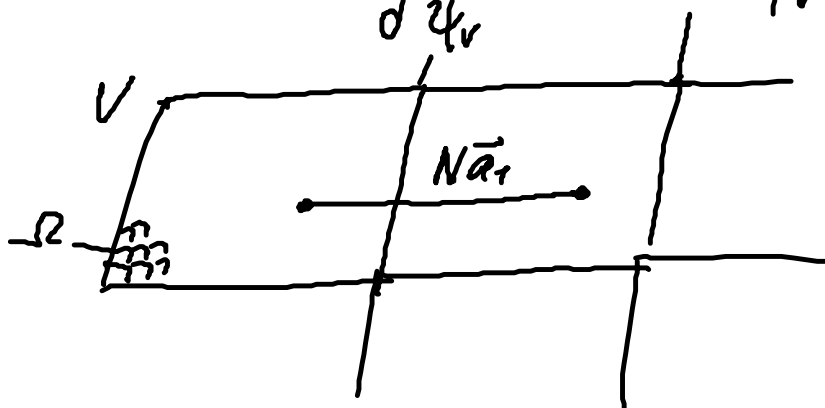
# Kap. 7 Quantenoptik

klass. Mech.  $W = \int_{t_0}^{t_1} L(q_k, \dot{q}_k, t) dt$  EP  $\frac{\delta W}{\delta q_k} = 0$

Feldtheorie

$W = \int_{t_0}^{t_1} L(\psi_v, \dot{\psi}_v, \psi_{v|k}) dt$  mit  $L = \int \mathcal{L}(\psi_v, \dot{\psi}_v, \psi_{v|k}) d^3r$

$W = \int_{t_0}^{t_1} dt \int d^3r \mathcal{L} \rightarrow \frac{\delta W}{\delta \psi_v} = 0, \psi_v = \psi_v(\vec{r}, t)$



$\mathcal{H}, \psi_k \in \mathcal{H}$  Basis

$\psi \in \mathcal{H}, \psi = \sum_v \psi_v \langle \psi_v | \psi \rangle$

$\langle \psi_v | \psi \rangle = \int \psi_v^*(x) \psi(x) dx$

$\psi(x) = \int \sum_v \underbrace{\psi_v(x) \psi_v^*(x')}_{\delta(x-x')} \psi(x') dx'$

$\psi_v(x) \rightarrow \frac{1}{\sqrt{V}} \exp\{i\vec{q} \cdot \vec{v}\}$