

$$\mathcal{L} = \bar{\psi} (i\not{\partial} - m)\psi + \frac{1}{2} \partial_{\mu}\sigma \partial^{\mu}\sigma - \frac{1}{2} m_{\sigma} \sigma^2 - \frac{1}{2} F_{\mu\nu} F^{\mu\nu} + \frac{1}{2} M_{\omega} \omega_{\mu} \omega^{\mu}$$

$$\omega_{\mu} \quad \mathcal{L}_I = g_{\sigma} \bar{\psi} \psi - g_{\omega} \bar{\psi} \gamma_{\mu} \psi \omega^{\mu}$$

$$\sigma \rightarrow \langle \sigma \rangle \quad \text{constant}$$

$$\omega_{\mu} \rightarrow \langle \omega_{\mu} \rangle \quad \begin{cases} \mu = 1, 2, 3 & 0 \\ \mu = 0 & \text{constant} \end{cases}$$

$$(\square + m^2)\sigma = g_{\sigma} \bar{\psi} \psi \rightarrow m^2 \sigma = g_{\sigma} \langle \bar{\psi} \psi \rangle$$

$$[\gamma_{\mu} (i\partial^{\mu} + \underbrace{g_{\omega} \omega^{\mu}}_{m^*}) - \underbrace{(m - g_{\sigma} \sigma)}_{m^*}] \psi =$$

$$k^{\mu} \rightarrow k^{\mu} + g_{\omega} \omega^{\mu}$$

$$m \rightarrow m^* = m - g_{\sigma} \sigma$$

$$T^{\mu\nu} = \frac{\partial \mathcal{L}}{\partial \partial_{\mu} \psi} \partial^{\nu} \psi + \frac{\partial \mathcal{L}}{\partial \partial_{\nu} \bar{\psi}} \partial^{\mu} \bar{\psi}$$

$$T^{00} = \epsilon \quad \frac{1}{3} T^{ii} = P$$

$$n_B = \langle \bar{\psi} \gamma_0 \psi \rangle$$

$$\langle \quad \rangle = \nu \sum_{k \in \{F\}}$$

$$n_0 = 0.16 \text{ fm}^{-3}$$

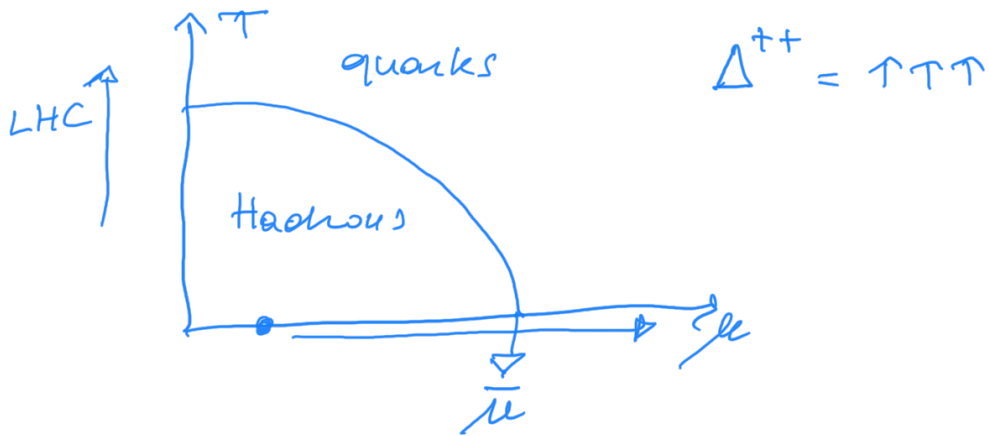
$$\frac{E_0}{N_B} \approx 16 \text{ MeV}$$

$$\frac{g_\sigma}{m_\sigma} \quad \frac{\partial \omega}{\partial \omega}$$

$$\vec{p}_\mu \quad \omega_\mu \quad \sigma \quad P = - \frac{\partial E_0}{\partial V}$$

$$H = H_N + H_\lambda + \sum \underline{V_{NN}} + \sum (\underline{V_{NN\lambda}} + \dots)$$

$$L_{\text{quark}} = \sum_f \bar{\Psi}_f (i \not{\partial} - m_f) \Psi_f + \frac{1}{2} g \bar{\Psi}_f \lambda^a \Psi_f$$



QCD

continuum

liberté Asintotica

$$g(Q^2) \rightarrow \text{DIS}$$

B

$$\alpha_s = \frac{g^2}{4\pi}$$

ges α_s Fermi α_s quark

und $m_q \sim \text{keV}$

s 100 keV

$$P = P - \underbrace{(\text{B})}_{\uparrow} + O(\alpha_s(n_B)) \quad \uparrow (g \alpha_s)$$

$$P = \frac{\epsilon}{3}$$