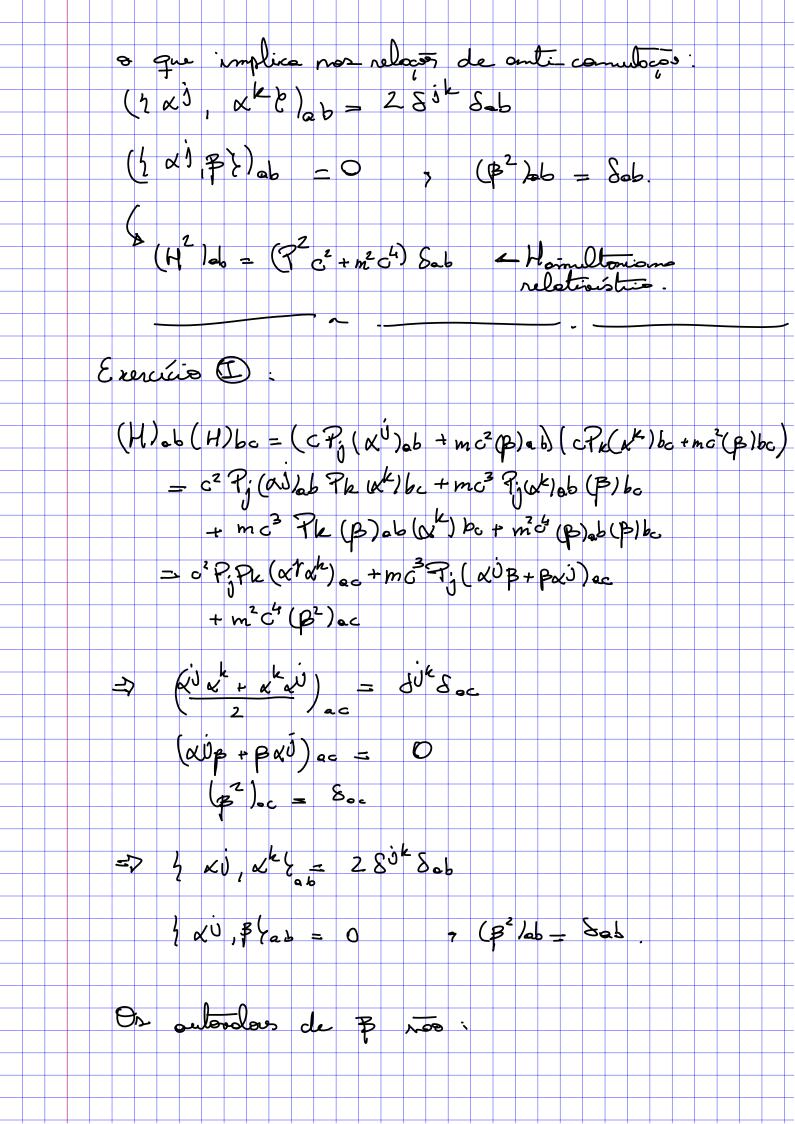
Capitulo I: equasso de Klein Gordon: th 2 22 0 = (-hc V + m C4) 0 -h2c2 25 \$ = (+2c2 7 + m2c4)  $\frac{h^2c^2(-2c^2+0^2)}{(2c^2+0^2)} = mc^4 \varphi$  $tv^2c^2\partial_\mu\partial^\mu\varphi=m^2c^4\varphi$  $\left(\frac{\partial \mu}{\partial r} \frac{\partial r}{\partial r} - \frac{m^2 c^2}{h^2}\right) \phi = 0$ ( de producte la pordinate. Tontation de Diroc it 20 p = (-it c(x) 26 2j + mc2 (B) 6  $(H)_{ab} = cP_{j}(\alpha J)_{ab} + mc^{2}(P)_{ab}$   $P_{j} = -i\hbar P_{j}$  $(H^2)_{ab} = c^2 P_j P_k (\alpha^j \alpha^k)_{ab} + mc^3 P_j (\alpha^j \beta^j + \beta^{\alpha^j})_{ab}$   $+ mc^4 (\beta^2)_{ab}$ 



アマニカマ ヨ アマニカマ ひ= λ² υ = λ λ = ±1. ~U = - 3 ~U. B = - KJ BKJ Tr (B) = Tr (- x) BxU) = - Tr (BxJxj) - - Tr(B) => Tr(B)=0.  $\mathcal{L}_{\alpha}$ isso implica no dinemo de \$ nor po  $\chi^{j} v = \lambda v \Rightarrow \chi^{j^{2}} v = \lambda \alpha i v = \lambda^{2} v$ ひ= ~~ コ ~ = 上1. mos: KJB = - BKJ KJ = - BKJ B  $\frac{1}{2} \ln (\alpha i) = -\ln (\beta \alpha i \beta) = -\ln (\alpha i \beta^2)$ = - Tr(xj) = Tr(xj) = 0que tombé implies na dimensos de « J

