

F454480/948C, sept 27 GS (Ground state) $|\mathcal{J}_{o}\rangle = (|\mathcal{I}_{q_{i}}\rangle |0\rangle$ 14a> = 9a9, /to> 1 ∈ / do> a \$ 1\$c>

19i; = 9a ap a, an /\$c) Eref + Fu + VN - Su/hohi> + / E < nj /w / nj 5 < p1 / 1 / 2 / ap 9 / 2 }

5 Cox 14> < I_X (I_S) (40) **一で**う Ja, 9, 1 To

140) = Co/40) + 5 Cn / Fn > Sac Cil Jack $= (C_0 + C_0) | \phi_0 \rangle$ $= \left(\sum_{q_{1i}} C_{q_1} q_{q_1} + \sum_{q_{1i}} C_{q_1} q_{q_1} q_{q_1} + \sum_{q_{1i}} C_{q_1} q_{q_1} q_{q_1} + \sum_{q_{1i}} C_{q_1} q_{q_1} q_{q_2} q_{q_1} + \sum_{q_{1i}} C_{q_1} q_{q_2} q_{q_1} + \sum_{q_{1i}} C_{q_1} q_{q_2} q_{q_2} + \sum_{q_{1i}} C_{q_2} q_{q_2} q_{q_1} + \sum_{q_{1i}} C_{q_2} q_{q_2} q_{q_2} + \sum_{q_{1i}} C_{q_2} q_{q_2} + \sum_{q_{1i}} C_{q_2} q_{q_2$

Co to, Normah zation (4) is at our disposal, we may then and tranky set Co = 1, which leads to Comesponding proportions coefficients CH < 40/\$0> = < \$1\$0> = 6=1 CORRETATION OPERATOR

$$H/H_{0}\rangle = E_{0}/H_{0}\rangle$$

$$(H-E_{0}) \sum_{pH} C_{H} I F_{H}^{p}\rangle = C$$

$$\langle Y_{0}| \times$$

$$\sum_{pH} I K - F_{0} I F_{H}^{p} \times C_{H}^{p} \times C_{H}^{p}$$

$$\downarrow P^{H} = C$$

$$\Rightarrow \sum_{pH} (C_{H}^{p}) C_{H}^{p} \times I F_{H}^{p} \times I C_{H}^{p} \times I$$

$$\downarrow P^{H} = F_{0} \sum_{pH} |C_{H}^{p}|^{2}$$

equivalent to vanational < 40/11/0> - > < 40/16> Lagrangian mu Etiphien The minimization gur S [< 40/1/40 > > < 140/165 = 0

$$\begin{array}{ll}
\widehat{\mathcal{L}}|\mathcal{H}_{o}\rangle &=& E_{o}|\mathcal{H}_{o}\rangle \\
\sum_{C,H} \widehat{\mathcal{L}}|\widehat{\mathcal{L}}_{H}\rangle &=& E_{o}\sum_{C,H} \widehat{\mathcal{L}}_{H}^{p}\rangle \\
\widehat{\mathcal{L}}_{o}\rangle &=& E_{o}\sum_{C,H} \widehat{\mathcal{L}}_{H}^{p}\rangle \\
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\widehat{\mathcal{L}}_{o}\rangle &=& E_{o}|\mathcal{L}_{$$

 $\sum \langle \mathcal{F}_{o} | \mathcal{H} | \mathcal{F}_{H} \rangle C_{H}^{P} = \mathcal{F}_{o} \sum \langle \mathcal{F}_{u} | \mathcal{F}_{u} \rangle c_{H}^{P}$ $\mathcal{F}_{u} = \mathcal{F}_{o} \sum \langle \mathcal{F}_{u} | \mathcal{F}_{u} | \mathcal{F}_{u} \rangle c_{H}^{P}$ $\langle \mathcal{F}_{o} | \mathcal{F}_{u} | \mathcal{F}_{u} \rangle c_{H}^{P}$ (\$\frac{\P}{\P}\) (\$\frac{\P}{ = Eo Co # < July (Depen) = \$100 Co + 16, C, + \$102 Cz + \$201 RIJIA CIPIL Czpz4

+ Mos Cs + --- Hon CN = Fo Co <1PM1 21 H10 C0 + H1, C1 + -- H1N CN = FOG (2p2h) H20 Co + H21 C1 + H22 C2 +... SCINCN = EUCZ NPNH Eurici = Eich

くましんしまる) Moo Stor Hoz - - 1 H10 H1, -HUN Shij= < In | U(I) NPNH NANH

$$= \frac{1}{2}$$

$$Hoo = \langle \mathbf{J}_{0} | \mathbf{J}_{0} | \mathbf{J}_{0} \rangle$$

$$= \sum_{i \leq F} \langle \mathbf{i} | \mathbf{h}_{0} | \mathbf{i} \rangle +$$

$$= \sum_{i \leq F} \langle \mathbf{i} | \mathbf{h}_{0} | \mathbf{i} \rangle +$$

$$= \sum_{i \leq F} \langle \mathbf{i} | \mathbf{h}_{0} | \mathbf{i} \rangle$$

$$= \sum_{i \leq F} \langle \mathbf{i} | \mathbf{h}_{0} | \mathbf{h}_{0} | \mathbf{j}_{0} \rangle$$

$$= \langle \mathbf{J}_{0} | \mathbf{J}_{0} | \mathbf{j}_{0} \rangle$$

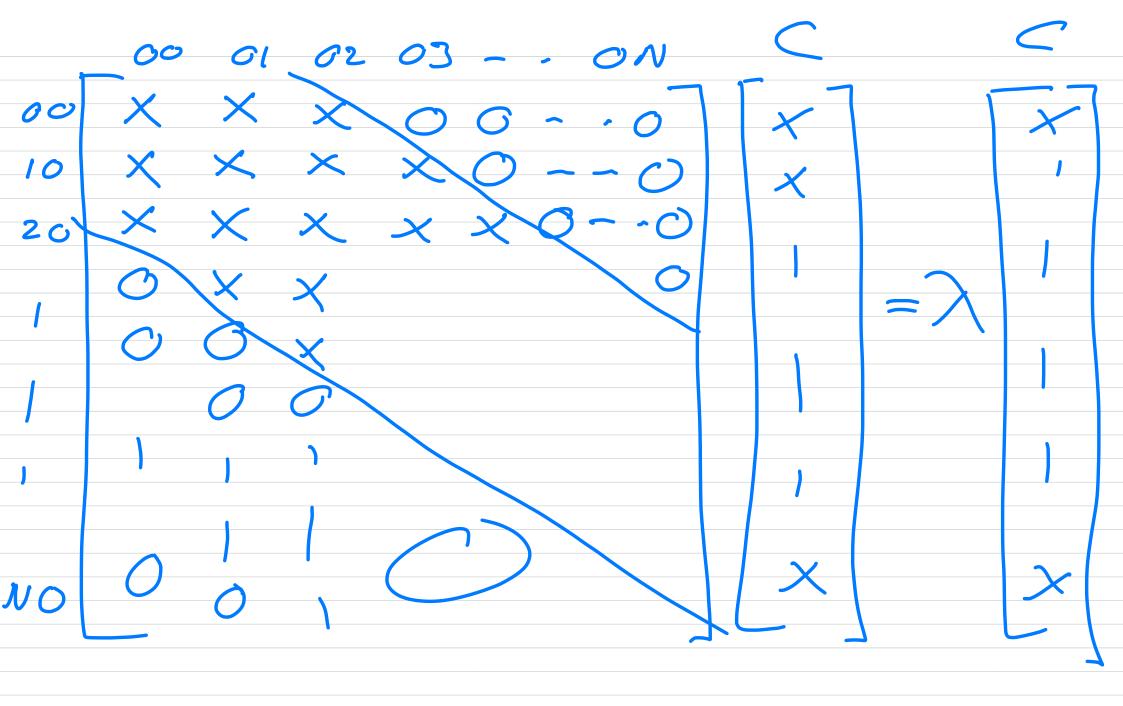
$$= \langle \mathbf{J}_{0} | \mathbf{J}_{0} | \mathbf{j}_{0} \rangle$$

$$= \langle \mathbf{J}_{0} | \mathbf{J}_{0} | \mathbf{j}_{0} \rangle$$

Noz = (I) H | JZP) < \$0 181 \$ii> = <ij/14/26>A5 $\mathcal{G}_{03} = \langle \mathcal{G}_{0}|\mathcal{H}|\mathcal{G}_{3H}\rangle = 0$ at most twohole Moy 50 = Mos = - = HO NPNH

8C11 = < \$\P_{14} | SC | \P_{141} > < Jan 12 1 1 5 + 0 H14 = (5,4) H/ E44)

Sill Frede

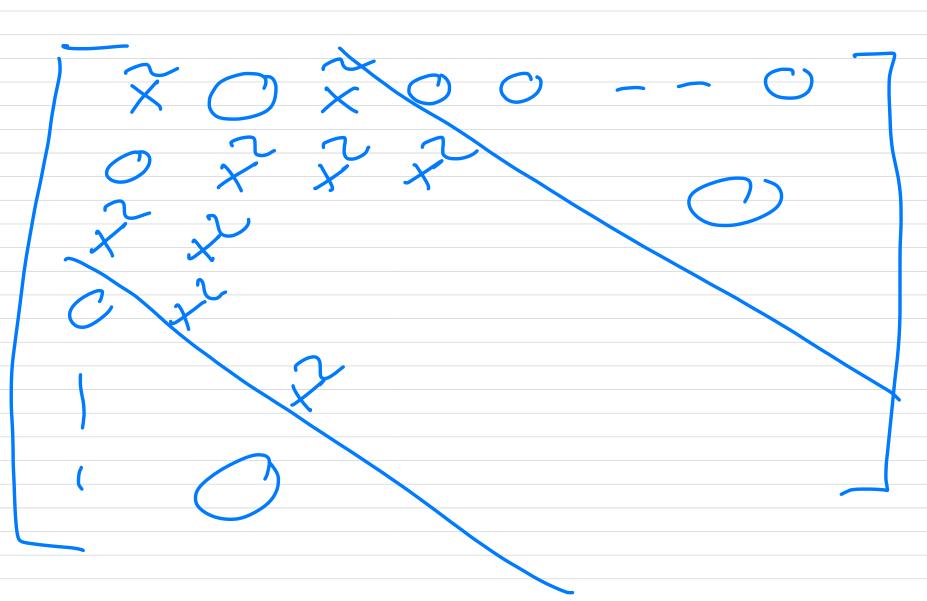


1st now is given by multi-plying from the left with of Amd use Co = 1 4.18e-E1 (4)+ こくまいパーモックラック Cra+ + $\sum_{ab} \langle \mathcal{F}_{ab} \rangle \mathcal{H} - \mathcal{E}_{c} \langle \mathcal{F}_{n'j} \rangle \mathcal{C}_{n'j} = 0$

(150) - (40/5c) Fo Eres <ilf + 2 < \$140 \$9> Cra Sij lolat > As-Simple Silver

SEO = EO-EORS connelation Knewn enugg Eilflas a chaq na + 2 < 1'j W/ab > Cij Mantine-Fock cilf(9) = 0 Mean-Field methods

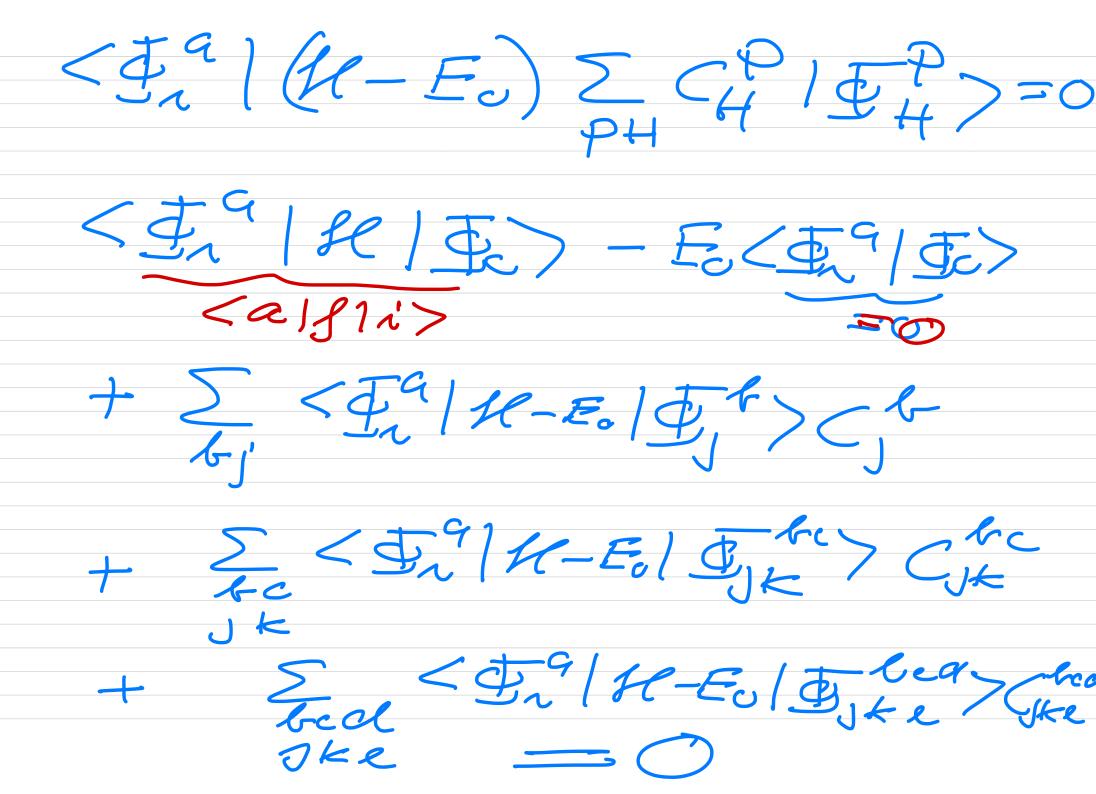
For the Hamiltonian



 $uu = uu = \underline{n} \quad u = \underline{u}^{-1}$ $u H c = \lambda c$ Usec = > uc

D = Um um-1 -- u, leu, unt-- un

(\$c(\$e)\$\frac{1}{2}>70, correspond to a specific Un' which Zenos out a sulttock of the Hamiltonian
matrix



(alfli) + (5,9/H-Folf) (1,2 + \(\frac{\pi_n^q}{\psi_n^q} \) \(\f (alsh') + (\$\phi^9/11/\pi^9) \q $\begin{aligned}
&= \frac{1}{-0} C_n \\
&= \frac{1}{2} \left(\frac{1}{2} \right) \\
&= \frac{1}{2} \left(\frac{1}{2} \right)$