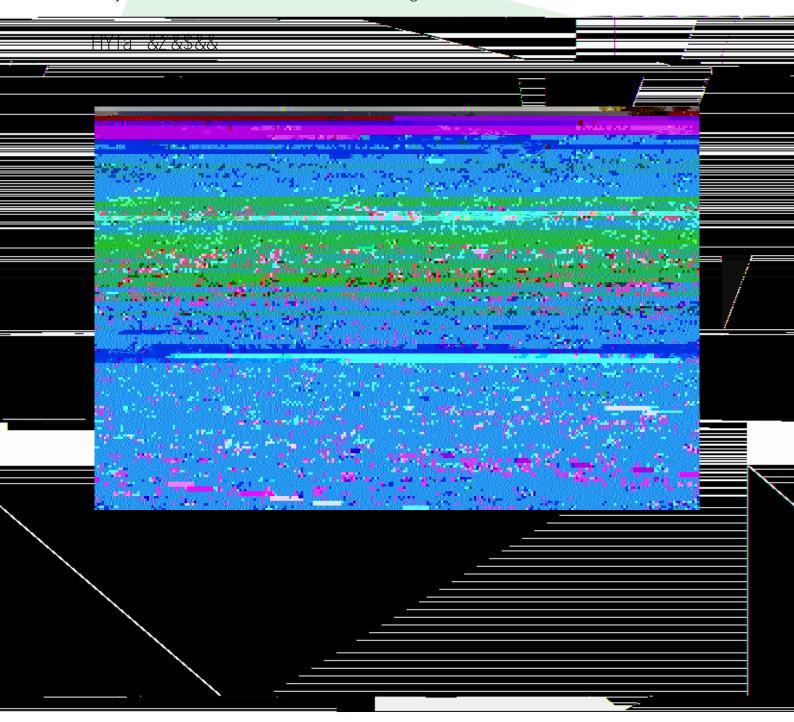


CVEN4703

5XjUbV\\X`KUh\Yf`EiU`]hm`Df]bV\]d`Yg



7ci fgY[.]Cj Yfj]Yk

7ci fgY 8YHJ] g

I b]hg cZ7fYX]h * *

Gi a a UfmcZh\Y'7ci fgY

: i bXUa YbHJ``UgdYWg`cZh\Y`W\Ya]ghfmUbX`V]c`c[mcZUei Uh]WYbj]fcba Ybhg`UfY`fYj]Yk YX`UbX`YI hYbXYX YbUV`]b[``UbU`mg]g`UbX`]bhYfdfYhUh]cb`cZdfcWYggYg`cWW ff]b[`]b`gi fZJWY`UbX`[fci bX`k UhYfg`Ug`k Y```Ug k UhYf`UbX`k UghYk UhYf`hYUha YbhgmghYa g"`7cbg]XYfUh]cb`]g`[]j Yb`hc`fYWYbhXYj Y`cda Ybhg`]b`k UhYf`UbX k UghYk UhYf`hYUha YbhHYW\bc`c[]Yg"`

7 ci fgY 5]a g

HcfY!ZJa]`]Uf]gY`h\Y`ghiXYbhk]h\`h\Y`Z bXUaYbhU``df]bW]d`Yg`cZkUhYf`d\mg]WgžW\Ya]ghfmUbX`V]c`c[mUbXhc`Udd`mh\YgY`df]bW]d`Yg`hch\Y`i bXYfgHUbX]b[`cZzUbX`XYjY`cdaYbhcZgc`i h]cbg`hczkUhYf`eiU`]hmdfcV`Yag`hmd]WU``cZh\cgY`YbWci bhYfYX`Vm

9bj]fcba Ybhu``9b[]bYYfg`UbX`Di V`]W< YU`th`UbX`K UghY`A UbU[Ya YbhigdYW]U`]ghg''`Ghi XYbhg`k]```XYj Y`cd`U gci bX`_bck `YX[Y`cZh\Y`ZUWcfg`]bZi YbW]b['k UhYf`Wca dcg]h]cb`]b`bUhi fU``UbX`Yb[]bYYfYX`gmghYa g`UbX k]```Udd`mh\Y`_bck `YX[Y`[U]bYX`fc`UbU`mg]g`cZi`UbX`XYj Y`cda YbhcZgc`i h]cbg`fcz`U'fUb[Y`cZWca a cb k UhYf`ei U`]hmdfcV`Ya g"`H\Y`Wci fgY`]g`XYg][bYX`fc`Ugg]ghth\Y`ghi XYbh]b``cWUh]b[`UbX`]bhYfdfYh]b[`fY`Yj Ubh `]hYfUhi fY`k]h\`Ya d\Ug]g`[]j Yb`fc`]Ł`]XYbh]Z]WUh]cb`cZW ffYbhighUhi g`cZ_bck `YX[Yž]]Ł`XYj Y`cda YbhcZ Uddfcdf]UhY`gc`i h]cbg`UbX`]]]Ł`fYWc[b]h]cb`cZfYa U]b]b[`_bck `YX[Y`[Udg"

7cifgY@YUfb]b[CihWcaYg

- %" I bXYfgHJbX`h\Y`W\Ya]\WJ``dfc\WggYg`h\UhcdYfUhY`k]h\]b`bUh fU``UbX`Yb[]bYYfYX`Uei Uh]\WgmghYa g UbX`\ck `h\YgY`dfc\WggYg`]bZi Yb\W`k UhYf`ei U`]\m"
- &" < Uj Y`gca Y`UddfYWJUfJcb`cZf\Y`W\U``Yb[Yg`f\UhYl]ghk]h\`fY[UfX`fc`a U]bfU]b]b[`UWWdfUV`Y`k UfYfei U`]mUbX`f\Y`_bck`YX[Y`[Udg`f\UhfYa U]b`k]h\`fY[UfX`fc`i bXYfgfUbX]b[`UbX`a]f][Uf]b[dUff]W``Uf`k UfYf`ei U`]mdfcV`Ya g"
- ' " C VHJ]b 'Ub'i bXYfgHJbX]b['cZVch\ 'Wcbj Ybh]cbU``UbX'UXj UbWX'a Yh\cXg'cZhfYUh]b['k UhYfg'UbX k UghYk UhYfg'gi W\ 'h\UhXYg]fYX'k UhYf'ei U`]hm]g'UW\]Yj YX"
- (" 7 Uffmci hU`]hYfUhi fY`fYj]Yk žk cf_]b`U`[fci dž'UbX`dfYgYbhZ|bX]b[g`YZZYWf]j Y`m"

HYUWX]b['GhfUhY[]Yg'

 $\label{eq:hamiltonian} $H^Y'W^c_i = \frac{1}{2} \sum_{j=1}^{\infty} \frac{1}{j} \sum_{j=1}^{\infty} \frac{1}{j}$

5ggYgga Ybh

5ggYgga Ybh'tUg_	K Y][\h	8iY'8UHY	7 ci fgY @YUfb]b[Ci hWca Yg 5ggYggYX
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&"":]bU`'91 Ua) \$1	Bch5dd`]WUV`Y	%ž`&ž`'
' "'; fci d'k cf_'UggYgga Ybh	&) ı	Bch5dd`]WUV`Y	%ž`&ž`'

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Gi Va]gg]cb'bchYg. '5``'ei]nnYg'UfY'cb`]bY'gi Va]gg]cb"

H\fYY'cb`]bY'A ccX`Y'ei]nnYg

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5````YWn fY'a UhYf]U`g'[]j Yb'VmK U]hY#D\Ua 'hc'VY'UggYggYX

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5ggYgga YbhWf]hYf]U

 $FZW8[S^7]S_[Sf[a] [eiaofZ'"] aXfZW8[S^?Sd] S`V fZWUSeeiad] [eiaofZ'"] aXfZW8[S^?Sd] "Kagd_Sd] e XadfZWUSeeiad] Ua_ba`W faXfZ[e UagdeWi [^aa` k TW[U^gVW] kagd8[S^?Sd] [XkagaTfS[0&"] [fZW8[S^7]S_[Sf[a] ž$

1		; i Ygh`YWh fY`dfYgYbhYX`Vm8f`M Ub`K Ub[
K YY_') . '&+ '>i bY '! '% >i `m	@YWn fY	6'i Y'[fYYb'U'[UY.'K UhYf'ei U']hm]ggi Yg'/ a UbU[Ya Ybh
		C WW ffYbWY cZ6; 5 / 'UggcWJUHYX'k UHYf ei U`]hm`]ggi Yg

	; i Ygh`YVVi fY`dfYgYbhYX`Vm8f`5bXfYk '?]bgY`U
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Fygci fWyg

FYWca a YbXYX FYgci fWYg

- $\bullet \text{ A K } < \text{`f\&\$\%\&L'K UhYf'HfYUha Ybh'Df]bW]d`Yg`UbX`8Yg][\text{ bž'} \text{ fX`YX]h]cbž'>c\b'K]`YmUbX`Gcbgž' +bW' }$
- 5XX]h]cbu``a UhYf]u`g`dfcj]XYX`cb`A ccX`Y"

@UVcfUhcfmK cf_g\cd \pm 0Zcfa Uh]cb

K cf_g\cd']g'j]U'E \neq 5 'A ccX'Y': cfi a "

Gi Va]gg]cb cZ5ggYgga YbhHUg_g

D`YUgY`fYZYf`hc`h\Y`A ccX`Y`dU[Y`cZh\Y`Wci fgY`Zcf`Z fh\Yf`[i]XUbW\`cb`UggYgga Ybhigi Va]gg]cb"

I BGK `\Ug`U`ghUbXUfX``UhY`gi Va]gg]cb`dYbU`hmcZ

•)ı 'dYf'XUmž'Zcf'U``'UggYgga Ybhg'k \YfY'U'dYbU'hm'Udd`]Ygž'WUddYX'Uh'Zjj Y'XUmg'f1%&\$`\ci fg\z'UZhYf k\]WX'U'ghi XYbh'WUbbchgi Va]h'Ub'UggYgga Ybhž'UbX'bc'dYfa]hhYX'j Uf]Uh]cb"

5 WUXYa]W<cbYghmUbX D`U[]Uf]ga

6Yk UfY "5 b 'Ugg][ba Ybhih Uh]bWi XYg 'd `U[]Uf]gYX 'a UhYf]U` 'k]```fYWY]j Y 'U`\$ı : U]`ž 'UbX 'ghi XYbhg 'k \c d`U[]Uf]gY 'UfY 'U`gc '`]UV`Y 'hc 'X]gW]d`]bUfm'UWf]cbž]bWi X]b[YI Wi g]cb 'Zfca 'Ybfc`a Ybh'

D`U[]Uf]ga `]g`h\Y`i gY`cZUbch\Yf`dYfgcb'g`k cf_`cf`]XYUg`Ug`]Zh\Ymk YfY`mci f`ck b"`K \Yb`]h`]g`bYWYggUfmcf XYg]fUV`Y`hc`i gY`ch\Yf`dYcd`Y'g`a UhYf]U``mci 'g\ci `X`UXYei UhY`mUW_bck `YX[Y`k \cgY`k cfXg`cf`]XYUg`h\Ym UfY`UbX`k \YfY`mci 'Zci bX`h\Ya 'f[]j]b['h\Y`Wca d`YhY`fYZYfYbWY`XYhU]`gž`]bWi X]b['dU[Y'bi a VYff'g\t\"H\Y @YUfb]b['7 YbhY'dfcj]XYg`Z fh\Yf`]bZcfa Uhcb`cb`k \UhWcbgh]hi hYg`D`U[]Uf]ga 'Uh

\hdg.#ghi XYbh'i bak "YXi "Ui #d`U[]Uf]aa

5 WUXYa]W + DZcfa Uh]cb

:]bU`'9I Ua]bUh]cbg.

:]bU`Yl Ua g`]b'H&`&\$&&'k]``VY`\Y`X'cb`]bY'VYlk YYb'%kh\'!`&) h\`5 i [i gh`&\$&&']bWi g]j Yž'UbX gi dd`Ya YbhUfmYl Ua g`VYlk YYb') h\`!'-h\`GYdhYa VYf`&\$&&']bWi g]j Y'''Mci 'UfY'fYei]fYX'hc'VY'Uj U]`UV`Y'cb h\YgY'XUhYg'''D`YUgY'Xc'bchhc'a U_Y'UbmdYfgcbU``cf'hfUj Y``UffUb[Ya Ybhg'Xi f]b['h\]g'dYf]cX'''

57589A = 758J = 79

• ? YmiGtUZltc '7 cbtUWhZcf '5 WUXYa]W5 Xj]WY 'flc[']b 'k]th 'mci f 'n=8 'UbX dUggk cfXŁ '