





SOCF5108

H\YfUdYi hjW7cbhYI hg`UbX`FY`Uhjcbg\]dg

HYfa 'C bY''##'&\$%-

7ci fgY[·]8YHJ]`g

7 fYX]hDc]bhg***

Gi a a UfmcZhXY7ci fgY

H\]gʻZJfghWći fgY`cZh\Y`A UghYf`cZ7 ci bgY``]b[`GcŴJU`K cf_`dfc[fUa`k]```]bhfcXi Wrmci 'hc`h\Y`dUfUa YhYfg cZWćbhYI hUbX`fY`Uh]cbg\]d`]b`Wći bgY``]b[`UbX`Wćbg]XYf`h\Y`[YbYf]WgcŴJU``k cf_`cf]YbhUh]cb`hc`W]Ybhgʻ ghfYb[h\g`UbX`fYg]`]YbW"''Mci`k]``YI Ua]bY`h\Y`]a dcfhUbWrcZh\Y`gdYŴJZ]W]mmcZWćbhYI hg`cZh\YfUdmUbX WćbhYI h`U``UbX`dck Yf`]ggi Yg`]b`h\YfUdYi h]WfY`Uh]cbg\]dg"'Mci`k]```U`gc`Yb[U[Y`k]h\`]ggi Yg`]b`mci f`ck b dfUW]WrcZi gY`cZgY`ZiYb[U[Ya YbhžYa dUh\mžWćbhU]ba YbhžUbX'Vci bXUf]Yg"

7cifgY@YUfb]b[CiHWcaYg

%" 8Ya cbglfUlY Uk UfYbYgg cZU i gY cZgY Z]b Wci bgY``]b["

- &" 9Id`U]b`h\Y`YZZYWfg`cZWcbhYIhiU``]ggiYg`]b`h\Y`h\YfUdYih]WfY`Uh]cbg\]d
- '"→YbhjZmUbX`YI d`cfY`]ggi Yg`cZYb[U[Ya YbhžYa dUh\mžWcbhU]ba YbhžUbX`Vci bXUf]Yg`k]h\]b`h\Y Wci bgY``cf!W]YbhifY`Uhjcbg\]d
- ("8YjY[°]cd'gY[°]ZfYZYI]jY'dfUWjWYg'k]h\'UkUfYbYgg'cZgcWjU[°]UbX'W `hifU[°]X]jYfg]hmik]h\]b'h\Y WcibgY[°]]b['fY[°]Uhjcbg\]d

HYUW]b[GhfUh []Yg

H\Y'HYUWX]b['gHUHY[]Yg'gYYWWYX]b'H\]g'WdifgY'U]a 'hc'Yb[U[Y'mci'k]H\WdifgY'aUHYf]U'''H\]g']g'UWX]YjYX H\fci [\'X]gW gg]cb'cZfYUX]b[g'UbX'gYa]bUf'WcbHYbh]b'fY[i`Uf'ZJWY'hc'ZJWY'gYa]bUfg'k]H\'H\Y'k\c'Y [fci d'''H\Y'gHUHY[]Yg'U`gc'U]a 'hc'Ugg]ghmci 'hc']bHY[fUHY'bYk '_bck`YX[Y'UbX'g_]``g']bhc'mci f'W]b]WU' dfUWf]WY'''H\]g']g'UWX]YjYX'H\fci [\'fYZYWf]cb'UbX'Wf]h]WU``UbU`mg]g'cZWci bgY``]b['dfUWf]WY'Ug'XYa cbgHfUHYX]b.'YI WYfdhg'f]]XYc#cb`]bYE'cZWci bgY``]b['gYgg]cbg/WUgY'UbU`mgYg'UbX'X]gWigg]cb'cZWUgY'j][bYHYg/UbX YI YfV]gYg'UbX'fc'Y!d`UmdfUWf]WY']b'H\Y'h hcf]U'''

5ggYgga Ybh

D`YUgY`bchYžZ fh\Yf`]bZcfa Uh]cb`UVci hYUW\`UggYgga YbhHUg_ž]bWi X]b[`gdYW]Z]Whcd]WUfYUgžk]``VY dfcj]XYX`]b`U`gYdUfUhY`XcW a YbhUbX`dcghYX`cb`h\Y`A ccX`Y`dU[Y`Zcf`h\]g`Wci fgY''

5ggYgga YbhHUg_g

5ggYgga YbhHJg_	K Y][∖h	8iY`8UhY	GhiXYbh@YUfb]b[CihWcaYgʻ5ggYggYX
FYZY₩jcb'YggUm	(\$1	&+#\$'#&\$%-`%%)-`DA	%ž(
F YgYUfWX 'YggUm'	*\$I	\$%#\$)#&\$%-`%%)-`DA	&Ž

5ggYgga Ybh8YfU]`g

5ggYgga Ybh'% FYZYWjcb YggUm

GhUfhXUhY. Bch5dd`]WUV`Y

@Yb[h\.'%ž)\$\$

8YHJ]`g. `Ghi XYbhg`k]```gi Va]hU`Wf]h]WU``fYZYW]cb`d]YWY`fa UI "`%) \$\$`k cfXgŁ`cb`U`cb`U`hcd]WfY`Yj Ubhhc`h\Y Wci fgY`a UhYf]U`"``Ghi XYbhg`k]```fYWY]j Y`k f]hhYb`ZYYXVUW_`UbX`U`bi a Yf]WU``[fUXY`k]h\]b`hYb`k cf_]b[`XUmg`cZ gi Va]gg]cb"`H\Y`ZYYXVUW_`g\YYh#fi Vf]Wk]```VY`Uj U]`UV`Y`hc`ghi XYbhg`Uhih\Y`ghUfhcZh\Y`Wci fgY`gc`h\Uhih\Ym WUb`k cf_`hck UfXg`gdYW]ZYX`ghUbXUfXg"``

Hi fb]h]b`gYh]b[.`H\]g`Ugg][ba Ybh]g`gi Va]hYX`h\fci [\`Hi fb]h]b`UbX`ghi XYbhg`WUb`gYY`Hi fb]h]b`g]a]`Uf]hm fYdcfng"

5ggYgga Ybh& FYgYUfWX YggUm

GhUfhXUhY.Bch5dd`]WUV`Y

@Yb[h\.'&ž)\$\$

8YHJ]`g. `Gh XYbhg`k]```gi Va]hU`fYgYUfW. `YggUmfa UI "`&) \$\$`k cfXgŁcb`U`hcd]WfY`Yj Ubhhc`h,Y`Wci fgY a UhYf]U`"`Gh XYbhg`k]```fYWY]j Y`k f]hhYb`ZYYXVUW_`UbX`U`bi a Yf]WU``[fUXY`k]h,]b`hYb`k cf_]b[`XUmg`cZ gi Va]gg]cb"`H\Y`ZYYXVUW_`g\YYh#i Vf]Wk]```VY`Uj U]`UV`Y`hc`gh XYbhg`Uhh\Y`ghUfhcZh\Y`Wci fgY`gc`h\Uhh\Ym WUb`k cf_`hck UfXg`gdYW]ZYX`ghUbXUfXg"``H\]g`]g`h\Y`Z]bU``UggYgga YbhZcf`h,]g`Wci fgY"`

Hi fb]h]b`gYh]b[.`H\]g`Ugg][ba Ybh]g`gi Va]hYX`h\fci [\`Hi fb]h]b`UbX`ghi XYbhg`WUb`gYY`Hi fb]h]b`g]a]`Uf]hm fYdcfhg"

F Ygci fWg

DfYgWf]VYX F Ygci fWyg

5```h\Y`WcfY`UbX`UXX]h]cbU``fYUX]b[g`UfY`UjU]`UV`Y`Zfca`@Y[Ubhc`Ub cb`]bY`\iV`Zcf`WcifgY`aUhYf]U`g"`Mci`WUb`UWWYgg`@Y[Ubhc`UbX`h\Y WcifgY`aUhYf]U`g`Vm`c[[]b[`cb`hc`h\Y`AccX`Y`dU[Y`Zcf`h\]g`WcifgY`k]h\ mcif`g]b[`Y`g][b`cb`ghiXYbh`c[]b"`

<u>Mci 'a i ghifYUX'YUWX'cZ'h\Y'WcfY'fYUX]b[g'df]cf'hc'WUgg'YUWX'k YY_"''Mci 'a Um'U`gc'k]g\'hc'fYUX'h\Y</u> <u>UXX]h]cbU``cdh]cbU``fYUX]b[fgz''</u>

 $\begin{array}{l} \label{eq:linearconductor} \label{eq:linearconductor} \end{tabular} \label{eq:linearconductor} \end{tabular} \label{eq:linearconductor} \end{tabular} \label{eq:linearconductor} \label{eq:linearconductor$

FYWca a YbXYX FYgci fWYg

Mci 'WUb'g][b'i d'Zcf'HUV'Y'cZ7cbHYbhg'fHC7Ł'5'Yfhg'Źca 'h\Y'\ca YdU[Yg'cZfY'Yj Ubh'ĉi fbU'gžhc'fYWY]jY Ub'Ya U]`'k \YbYj Yf'bYk 'Ufh]WYg'UfY'di V`]g\YX']b'h\Uh'ĉi fbU`'''>ci fbU`'k YVg]HYg'k]``cZhYb'WUffm]bZcfa Uh]cb'cb'h\Y'a cghij]Yk YX'UbX'a cghWhYX'Ufh]WYg/h\YgY'UfY'`]_Y`mhc'VY']bHYfYgh]b['UbX'cZhYb]bZi Ybh]U``Wcbhf]Vi h]cbg''; cc[`Y'GW\c`Uf'k]``U`gc'dc]bhmci 'hc'Ufh]WYg'h\Uh'\Uj Y'WhYX'U'dUfh]W `Uf'Ufh]WY UbX'\YbWY'k]``YY'fY'UhYX'hc'h\Y'hcd]W

@b_g`hc`UXX]h]cbU``fYgci fWYgžij]XcYg`UbX`hYI hg`k]```VY`X]gWiggYX`]b`WUgg"

7 ci fgY'9j U`i Uh]cb'UbX'8Yj Y`cda Ybh

Ghi XYbhYj U'i Uhji Y 'ZYYXVUW_']g`[Uh\YfYX'dYf]cX]WU`mi g]b[žUa cb['ch\Yf'a YUbgžI BGK fg'_ kWj bWd[W UW dfcWygg"' = Zcfa U``ZYYXVUW_'UbX'WUgg![YbYfUhYX'ZYYXVUW_'UfY'U'gc']a dcftUbh'Ghi XYbhZYYXVUW_']g'hU_Yb gYf]ci g`mž'UbX'WcbhJbi U``]a dfcj Ya Ybhg'UfY'a UXY'hc'h\Y'Wci fgY'VUgYX']b'dUfhcb'gi W. 'ZYYXVUW_'' G][b]Z]WUbh'W\Ub[Yg'hc'h\Y'Wci fgY'k]``VY'Wca a i b]WUhYX'hc'gi VgYei YbhWc\cfhg'cZghi XYbhg'HU_]b['h\Y Wci fgY"'= fYgdcbgY'hc'ghi XYbhZYXVUW_'Zfca 'h\Y``UghHa Y'h\]g'Wci fgY'k Ug'HUi [\hz'k Y'\Uj Y'a cX]ZYX gYa]bUf'WcbhYbhUbX'ghfi Whi fY"

Gi Va]gg]cb cZ5ggYgga YbhHUg_g

Gi Va]gg]cb cZ5ggYgga YbhHUg_g

Hi fb]h]b Gi Va]gg]cb

Zmci YbWci bhYf'U'dfcV'Ya 'k \Yb'UthYa dhjb['tc'gi Va]hmci f'Ugg][ba Ybht\fci [\'Hi fb]hjbžd'YUgY hY'Yd\cbY'9I hYfbU'`Gi ddcfhcb'-',) '' ' %cf'Ya U]`'h\Ya 'cb'YI hYfbU'hY'hgi ddcfh4 i bgk "YXi "Ui '"'Gi ddcfh \ci fg'UfY', .\$\$Ua '-'%\$.\$\$da 'cb'k YY_XUmg'UbX'-.\$\$Ua '-') .\$\$da 'cb'k YY_YbXg'fl *) 'XUmg'U'mYUfŁ''Zmci UfY'i bUV'Y'hc'gi Va]hmci f'Ugg][ba YbhXi Y'hc'U'ZJi `hk]h\'Hi fb]hjb'mci 'a UmUdd`m'Zcf'Ub'YI hYbg]cbžVi hmci a i ghfYhU]b'mci f'hjW_Yhbi a VYf'Zfca '9I hYfbU'`Gi ddcfhfU'cb['k]h\ 'Ubmch\Yf'fY'Yj UbhXcW a YbhgŁ'hc]bWi XY'Ug'Yj]XYbWY hc'gi ddcfhmci f'YI hYbg]cb'Udd`]WUhjcb"'Zmci 'Ya U]`'9I hYfbU'`Gi ddcfhimci 'k]`` Ui hca UhjWU'`mfYWY]j Y'U'hjW_Yhbi a VYfžVi h]Zmci 'hY'Yd\cbY'mci 'k]``bYYX'hc'gdYWJZJWU'`mUg_'Zcf'cbY" Hi fb]hjb'U`gc'dfcj]XYg'i dXUhYg'cb'h\Y]f'gmghYa 'gfUhi g'cb'Hk]hYf"

; YbYfU``mž'UggYgga YbhHUg_g'a i ghVY'gi Va]HHXXYYWYfcb]WU``mj]U'Y]H\Yf'Hi fb]h]b'cf'U'A ccX`Y Ugg][ba Ybh''=b`]bgHUbWYg'k \YfY'H\]g']g'bchdcgg]V`Yž']hk]``VY'gHUHYX'cb'mci f'Wci fgY'g'A ccX`Y'g]HY'k]H\ U`HYfbUh]j Y'gi Va]gg]cb'XYHU]`g''

: cf`]bZcfa Uh]cb`cb`\ck 'hc`gi Va]hUgg][ba Ybhg`cb`]bY`j]U`A ccX`Y.`\hhdg.##gh XYbh'i bgk "YXi "Ui #\ck! gi Va]hUgg][ba Ybha ccX`Y

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

D`U[]Uf]ga `]g`i g]b[`H\Y`k cfXg`cf`]XYUg`cZcH\Yfg`UbX`dfYgYbh]b[`H\Ya `Ug`mci f`ck b"`+hWUb`HU_Y`a Ubm Zcfa gžZfca `XY`]VYfUHY`W\YUH]b[`Hc`UWW]XYbHU``mWcdm]b[`Zfca `U`gci fWY`k]H\ci hUW_bck `YX[Ya YbH' i bXYfgHUbX*mci f*f][\hg*UbX*fYgdcbg]V]`]h]Yg*Ug*U*gh XYbhUhI BGK

5WUXYa]W=bZcfaUh]cb[·]

: cf'YggYbhJU`'ghi XYbh']bZcfa UhJcb'fY`UhJb['hc.

- fYei YghgʻZcf'YI hYbg]cb/
- `UHY'gi Va]gg]cbg'[i]XY`]bYg/
- fYj]Yk 'cZa Uf_g/
- I BGK '<YU`h\ UbX'GUZYhmidc`]W}Yg/
- YI Ua]bUh]cb'dfcWYXi fYg/
- gdYWJU``Wcbg]XYfUHjcb`]b`H\Y`Yj YbhcZ]``bYgg`cf`a]gUXj Ybh fY/
- gh XYbhYei]hmUbX X]gUV]`]hm/
- UbX'ch\Yf'YggYbhJU`'UWUXYa]W]bZcfa UhJcbž'gYY

<u>htdg.#k k k "Ufhg"i bgk "YXi "Ui #W ffYbHgh XYbhg#UWUXYa]W]bZcfa Uh]cb#dfchcWc`g![i]XY`]bYg#</u>