

ARTS3218

>UdUbYgY'<]ghcfm'AcXYfb'A]fUWYg'UbX'Amh\c`c[]Yg

HYfa 'H\fYY''##'&\$&\$

7ci fgY⁻Cj Yfj]Yk

GHJZ7cbHJWh8YHJ]`g

7cbj Ybcfg

B Ua Y	9a U]`	5j U]`UV]`] m	@cWUhjcb	D\cbY
8 f'GU``m'A W@UfYb	gU``m'a WUfYb4 i bgk "YXi "Ui	j]UʻYa U]`		

GWXcc`7cbHJWhi±bZcfa Uh]cb

GWkcc`cZ<iaUb]hJYg'UbX'@Ub[iU[Yg

@c\\U||cb. G\\cc`C\\Z|\\\žA cfj\Yb'6fck\b'6i]\X]b[\\ž@Yj\Y``&\\z\&),

CdYb]b['<ci fg. 'A cbXUm! ': f]XUmž - Ua '!') da

D\cbY.'Ž*%'&'-',)'%*,%

: UI . Ž*%'&'-',)', +\$)

9a U]`. <u>\U`4 i bgk "YXi "Ui</u>

7ci fgY 8YHJ] g

7 fYX]hDc]bhg**

Gi a a UfmcZh\Y 7ci fgY

 $\label{thm:locality$

7 ci fgY @YUfb]b[Ci hMca Yg

%" 8 Ya cbghfUhY bck `YX[Y cZh\Y \]ghcfmcZa cXYfb >UdUb"

- &" 5bU`mgY`a cXYfb`>UdUbYgY`\]ghcfmih\fci [\'ih\Y``Ybg`cZ[YbXYf`UbX`ZYa]b]gh'g\\\c`Ufg\]d"
- " 7 cbglfi Wibi UbWX: Uf[i a Yblg: UVci ha cXYfb: >UdUbYgY:\]glcfm]b:kf]lhYb: UbX#cf:jYfVU: Zcfa ":
- ("9Id`U]b`_YmXYVUhYg`UbX`WcbWYdhg`]b`acXYfb`>UdUbYgY`\]ghcfm'
-) " @cWUHY 'UbX 'UbU'mqY 'df]a UfmUbX#cf'gYWcbXUfma UHYf]U` 'fY`Yj Ubhhc 'a cXYfb '>UdUbYgY'\]ghcfm

HYUWX]b['GhfUhY[]Yq'

 $\label{eq:linear_continuity} $$H\]g'Wc'ifgY'igYg''YW'ifYgZ''fYUX]b[g'UbX']bXYdYbXYbh'fYgYUfW''hch\Y''/$

5ggYgga Ybh

5ggYgga YbhHUg_g

5 ggYgga Ybh'hUg_	K Y][\h	8iY'8UHY	Gh XYbh@YUfb]b[Ci hWca Ygʻ5ggYggYX
A U'cf'9ggUm	(\$1	K YY_'%\$	%ž&Ž ž(ž)
±b!7`Ugg'HYgh', %'	&\$ı	K YY(% <u>₹</u> (ž)
±b!7`Ugg'HYgh', &'	&\$ı	K YY_'+	%ž(ž)
±b!7`Ugg'HYgh',''	&\$I	K YY_"%\$	%ž(ž)

5ggYgga Ybh8YHJ]`g

5ggYgga Ybh% A U^cf 9ggUm

GhUfhXUhY. K YY_'%

8YHJ]`g.

cfih.]gifYgYUfW.`YggUmžmci 'UfY'fYei]fYX'hcigY`YWhCB9'cZh\Y'h\fYY'YggUmei Ygh]cbg'h\Uh'UfY'dcgh\X'cb A ccX`Y"'=b`mci fifYgdcbgY'hcih\Y'ei Ygh]cb'mci 'a i ghfYgYUfW.`UbX'Wf]h]WU``mYl Ua]bY'h\Y'a U]b'WcbWldhg UbX'h\Y'Uf[i a YbhgifY`Uh'X'hcih\Y'k YY_]b'k\\]W\mci fiei Ygh]cb'k Ug'X]gWlggYX"

9ggUmg`k]``VY`&z)\$\$`k cfXg``cb[z``UbX`k]```VY`gi Va]hh/X`j]U`Hi fb]h]b`cb`A ccX`Y''`: YYXVUW_`k]```VY`j]U fi Vf]WUbX`bi a Yf]WU`a Uf_"

Hi fb]hjb gYhjb[. `H\]g Ugg][ba Ybh]g gi Va]hhYX h\fci [\`Hi fb]hjb UbX gh XYbhg Xc bchgYY Hi fb]hjb g]a]`Uf]hmfYdcfhg"

5ggYgga Ybh'& =b!7`Ugg HYgh', %

GhUfhXUhY. K YY_ (

8YW]`q.

H\]a_]a_h\Y_Z[fghcZh\fYY_hYgha_UbX_]bWi_XYa_&\$_a_i _hd_Y_Wk.c]WY_ei Yghcba_"

: YYXVUW_'k]```HJ_Y'h\Y'Zcfa 'cZU'bi a Yf]\W\``a Uf_'UbX'cfU``\Wca a YbH'

5XX]h]cbU`XYhJ]`g.

7 cj Yfg WcbhYbhZfca ik YY_g'%z &z'' "'H\Y'hYghk]``Wcbg]ghcZ&\$'a i `h]d`Y!'Wkc]WY'ei Ygh]cbg'VUgYX'cb'h\Y fYUX]b[gž`YWh fY UbX'h hcf]U``WcbhYbhfYYj Ubhhc'h\Y'k YY_g'VY]b['UggYggYX"'Mci f'a Uf_'k]``VY'fYYUgYX Uddfcl]a UhY`mcbY'k YY_UZhYf'cb'A ccX`YžUbX'Z fh\Yf'ZYYXVUW_k]``VY'[]j Yb']b'U'gi VgYei Ybhh hcf]U`'j]U U'[YbYfU``X]gW gg]cb"

5ggYgga Ybh' . =b!7`Ugg HYgh . &

GhUfhXUhY. K YY +

8YHJ]`g.

H\]g_]g_h\Y_gYWbX_cZh\fYY_hYghg_UbX_]bWi_XYg_&\$_a_i_`h]d_Y_W\c]W'_ei_Ygh]cbg''

: YYXVUW_'k]``'HJ_Y'H\Y'Zcfa 'cZU'bi a Yf]WJ``a Uf_'UbX'cfU``Wca a YbH'

5XX]h]cbU`XYhU]`g.

7 cj Yfg Wcbhybh Zfca ik YY_g'(ž) ž'+"'H\Y'hyghk]``Wcbg]ghcZ&\$ a i `h]d`Y! 'Wkc]WY'ei Ygh]cbg 'VUgYX'cb'h\Y fYUX]b[gž`YWh fY 'UbX'h hcf]U``WcbhybhfYYj Ubhhc'h\Y'k YY_g'VY]b['UggYggYX"'Nci f'a Uf_'k]``VY'fY`YUgYX Uddfcl]a UhY`mcbY'k YY_'UZhYf'cb'A ccX`YžUbX'Z fh\Yf'ZYYXVUW_'k]``VY'[]j Yb']b'U'gi VgYei Ybhh hcf]U`'j]U U'[YbYfU``X]gW gg]cb"

5ggYgga Ybh(. +b!7`Ugg HYgh; '

GhUfh'XUhY. K YY '%

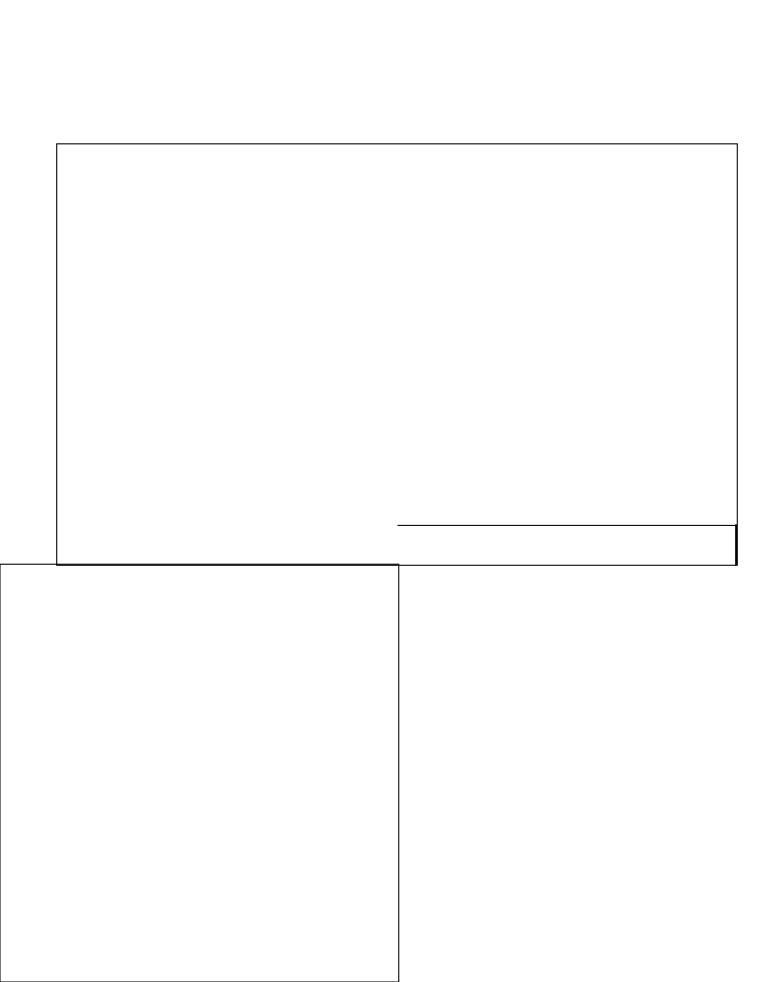
8 YW] g.

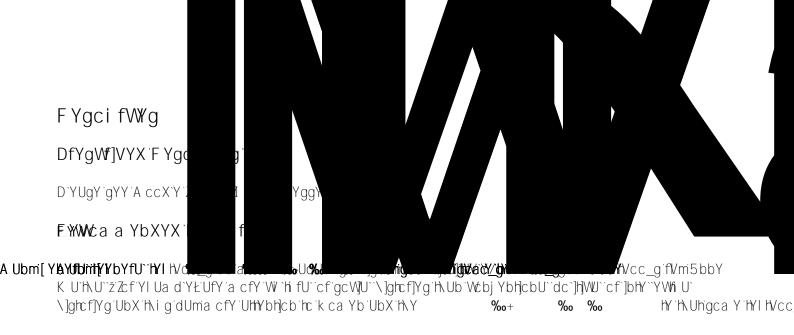
H\]g^]g^h\Y^h\]fX^cZh\fYY^hYqhq^UbX^]bWi XYq^&\$^a i `h]d`Y^W\c]WY^ei Yqh]cbq"^

: YYXVUW_'k]``'HU_Y'H\Y'Zcfa 'cZU'bi a Yf]\W\`a Uf_'UbX'cfU``Wca a YbH'

5XX]h]cbU`XYHJ]`g.

7 cj Yfg'WcbhYbh'Zca 'k YY_g', ž-ž%\$"'H\Y'hYgh'k]``Wcbg]ghcZ&\$'a i `h]d`Y!'Wkc]WY'ei Ygh]cbg'VUgYX'cb'h\Y fYUX]b[gž`YWi fY'UbX'hi hcf]U`'WcbhYbhfY`Yj Ubh'hc'h\Y'k YY_g'VY]b['UggYggYX"'Mci f'a Uf_'k]``'VY'fY`YUgYX Uddfcl |a UhY`mcbY'k YY_'UZhYf'cb'A ccX`Y"





FY]gWXUiYfž'9Xk]b/7fU][ž5`VYffž'>UdUb. 'HfUX]hjcb'UbX'HfUbgZcfaUhjcbž5``Yb/1bk]bž%,-"

 $\text{GWchhA cfhcbžK "$\ddot{z}$>$\text{UdUb. \del{thm}} = g <]g \text{hcfm} \text{UbX '7 i `hi fY} \del{thm} \text{BYk \del{thm}} \text{Wcf} \del{thm} \del{thm} \text{Wcf} \del{thm} \del{thm} \text{Wcf} \del{thm} \text{Wcf} \del{thm} \del{thm} \del{thm} \text{Wcf} \del{thm} \del{t$

GloffmžF]WXUfXž5 <]glofmcZAcXYfb > UdUbžDYb[i]bž%, %"

HUb'jžA]mi a YžA mh\žDfchYgh'UbX Ghfi [[`Y']b`C_]bUk Už@cbXcbžFci hY[Yž'&\$\$*"

Hcha Ubž7cbfUXž5 <]qhcfmcZ>UdUbžClZcfX UbXA U`XYbžA Uq"ž6`UWkY``DiV`]q\Yfž&\$\$\$"

 $\text{K Ugk c} \ \text{z} \ \text{S} \ \text{b} \ \text{b} \ \text{z} \ \text{A} \ \text{c} \ \text{XYfb} \ \text{`>UdUbYgY'GcW} \ \text{Y} \ \text{m} \ \text{z}'' \ \text{`} \ \text{`$\%$ - ($\ \text{z}'' \ \text{C} \ \text{|}\ \ \text{Z}'' \ \text{|}\ \ \text{b}) \ \text{|} \ \text{Y} \ \text{fg} \ \text{|} \ \text{m} \ \text{D} \ \text{fY} \ \text{gg} \ \text{z} \ \text{|} \ \text{x}'' \ \text{x}'' \ \text{|} \ \text{x}'' \ \text{|} \ \text{x}'' \ \text{|} \ \text{x}'' \ \text{x}'' \ \text{|} \ \text{x}'' \ \text{|} \ \text{x}'' \ \text{|} \ \text{x}'' \ \text$

K fUmž'< Uffmi/ '7 cbfcmž'<]`UfmiflYXgŁž'>UdUb '91 Ua]bYX. 'DYfgdYW¶j Yg'cb'A cXYfb'>UdUbYgY'<]ghcfmž I b]j Yfg]hmcZ< Uk U]]`DfYggž'%, ' "

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

7 ci fgYgʻUfYʻdYf]cX]\WJ``mfYj]Yk YX`UbX`ghi XYbhgʻ ZYYXVU\W_`]gʻi gYX`hc`]a dfcj Y`h\Ya "`: YYXVU\W_`]g [Uh\YfYX`Zīca `ghi XYbhgʻi g]b[`a m9l dYf]Yb\W'''=i]g`Yb\\ci fU[YX`ghi XYbhg`\ca d`YhY`h\Y]f`gi fj Ymg`Vm U\W\Ygg]b[`h\Y`dYfgcbU`]gYX`k YV``]b__j]U'h\Y`A ccX`Y`\\ci fgY`g]hY''

Gi Va]gg]cb cZ5ggYgga YbhHUg_g

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

Image: Ybwei bhyfu'dfcv'ya k \yb'uhhya dhjb['hc'gi va]hmci f'Ugg][ba Ybhh\fci [\ 'Hi fb]h]bž'd'YUgY

Hy'Yd\cby'9| hy'fbu''Gi ddcfhcb'-',) '' ' ' %cf'Ya U]''h\Ya 'cb'Y! hy'fbu'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'mYUft'''=Z'mci
UfY'i bUV'Y'hc'gi va]hmci f'Ugg][ba YbhXi Y'hc'U'ZJi 'hk]h\ 'Hi fb]h]b'mci 'a Um'Udd'mZcf'Ub'Y! hy'bg]cbž'Vi hmci
a i ghfYhJ]b'mci f'h]W_Yhbi a VYf'Zfca '9! hy'fbU''Gi ddcfhfU'cb['k]h\ 'Ubmch\Yf'fy'Yj UbhXcW a Ybhgt'hc
]bWi XY'Ug'Yj]XYbW' hc'gi ddcfhmci f'Y! hy'bg]cb'Udd']WUh]cb"'=Zmci 'Ya U]''9! hy'fbU''Gi ddcfhmci 'k]'`
Ui hca Uh]WJ'`mfYW']j Y'U'h]W_Yhbi a VYfž'Vi h]Zmci 'hY'Yd\cbY'mci 'k]``bYYX'hc'gdYW]Z]WJ'`mUg_'Zcf'cbY''
Hi fb]h]b'U'gc'dfcj]XYg'i dXUhy'g'cb'h\Y]f'gmghYa 'ghUh' g'cb'Hk]hyf''

; YbYfU`mž'UggYgga YbhiHug_g'a i ghVY'gi Va]hhYX'Y`YVWfcb]\WJ``mij]U'Y]h\Yf'Hi fb]h]b'cf'U'A ccX`Y Ugg][ba Ybh''=b']bgHJb\W'g'k \YfY'h\]g']g'bchdcgg]V`Yž']hk]```VY'gHJhYX'cb'mci f'\\circ i fgY'g'A ccX`Y'g]hY'k]h\U`hYfbUh]j Y'gi Va]gg]cb'XYHJ]`g"

cfi]bZcfa Uhjcbicbi\ckihcigi Va]hUgg][ba Ybhgicbi]bYij]UiA ccXiY.i\hdg.#gh XYbhi bgk "YXi "Ui #\ck! gi Va]hUgg][ba Ybha ccXiY

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

D`U[]Uf]ga i]gii g]b[ih\Yik cfXgicfi]XYUgicZch\YfgiUbXidfYgYbh]b[ih\Ya iUgimci fick b"i=hWJbihU_Yia Ubm Zcfa gžZfca iXYi]VYfUhYiWXYUh]b[ihciUWW]XYbhU`mWcdm]b[iZfca iUigci fWYik]h\ci hiUW_bck iYX[Ya Ybh'

IBGK [fcidg'd'U[]Uf]ga]bhc'h\Y'Zc``ck]b['WUhY[cf]Yg.

5 WUXYa]W + DZcfa Uhjcb

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

- fYei Yghg Zcf Yl hYbg]cb/
- `UhY 'gi Va]gg]cbg '[i]XY`]bYg/
- fYj]Yk 'cZa Uf_g/
- I BGK < YU`h\ UbX GUZYmdc`]W]Yg/
- YI Ua]bUh]cb dfcW/Xi 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