fUb[Y'cZ'c]bha ch]cb'k]h``]h`Y'cf'bc'fYg]ghUbWY'hc'a ch]cb'QQ $bWYUgYg'k h''_b' fmz'k \ W''_b'h fb'a UmfYgi h''_b'bgHV''_mQQ$

H Y'bYi ffU'ncbY.

- GYj Yf]mcZC5 'UggcWJUHX'k]h 'h Y'bi a VYf cZdfYcdYfUhjj Y'X]g`cWUhjcbg'O/Q
- DfYjUYbWY`cZdfYcdYfUhjjY`[`Ybc\iaYfU`C5`]b`UbhYf]cf`]bgHV]`]m`, "!%j`i `O⁄z8z̈'Q

=blfcXiWicb

- ("" '' '' '' '%\$`\`X]g`cWUh]cb'hc') \`X]g`cWUh]cb'fl][" Ł
- =b]hJU`ghJZzbYgg`]b`YI hYfbU`fchUhJcb`g][b]ZJWUbh`m]bWYUgYX`Vm (*'*\`&bX`X]g`cWUh]cb`hc`]bhWh`ghUhYž')'*\`)h``X]g`cWUh]cb`hc`%ghX]g`cWUh]cbžUbX
-) "\$1 `%\$h `X]g`cWUh]cb'hc') h `X]g`cWUh]cb'fl]["&L

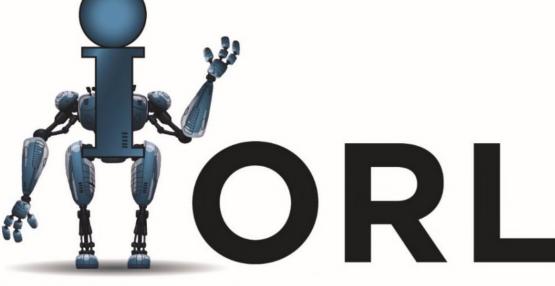
") i ^{}&bX`X]g`cWUh]cb`hc`]bhUhhYž) ", i ^{*}) h ^{*}X]g`cWUh]cb`hc`%ghX]g`cWUh]cbžUbX

BYilfU`ncbY`g][b]ZJWUbhm]bWYUgYX`Vm

FYgi `hg



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% YdUfha YbhcZ6]cYb[]bYYf]b[/ % YdUfha YbhcZCfh\cdUYX]WGif[YfmA I b]j Yfg]mcZD]hgVi f[\

HYhgi m<code>JHU_YbU[</code> $\frac{1}{2} \frac{1}{2} \frac{$ Jc`_Yf'AigU`[&]z'zF]WUfX'9'8YVg_]^{%&}z5`VYfh@b&

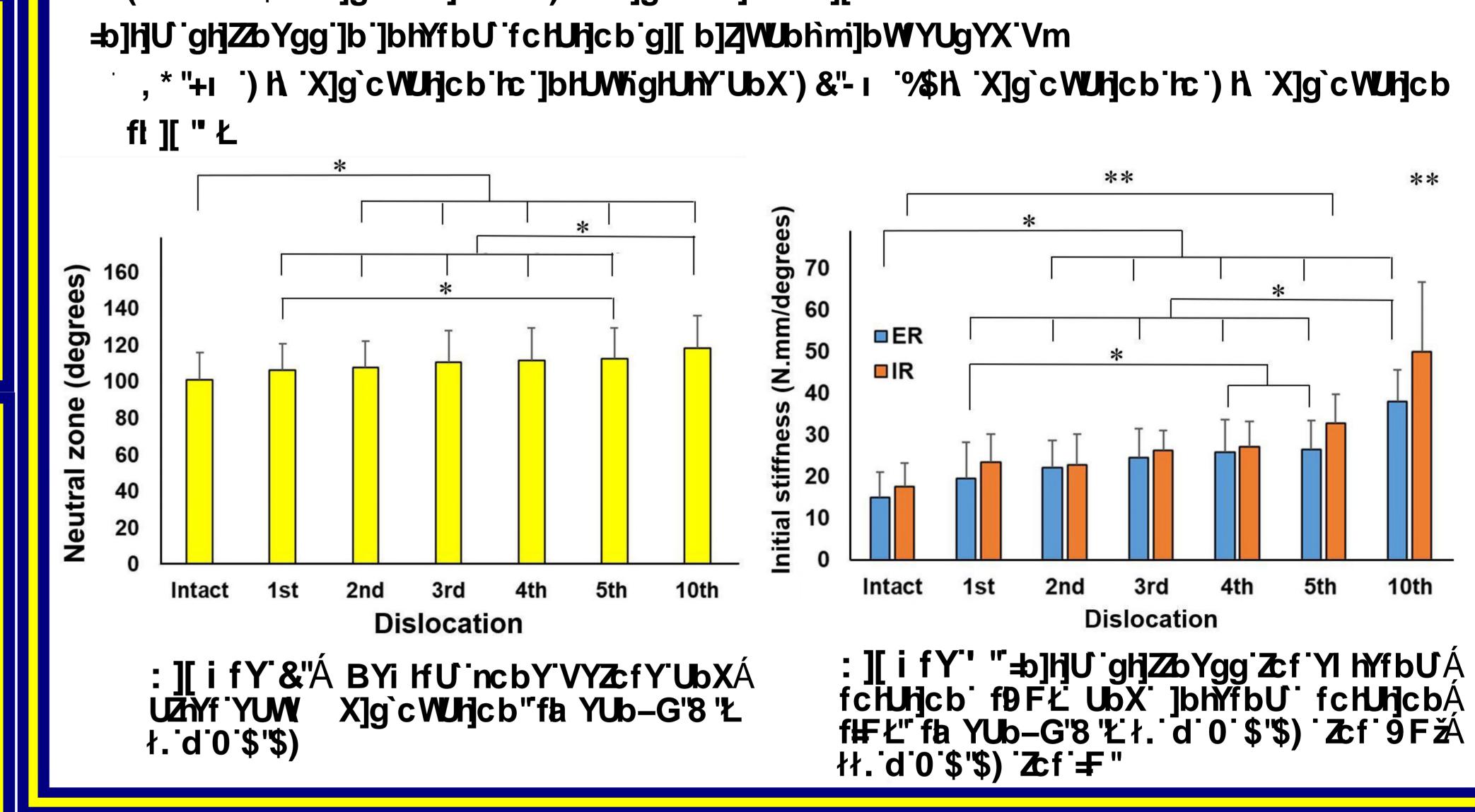
All@++D@9`5BH9F=CF`8=G@C75H=CBG`7Cl@8`695`F=G?`:57HCF`:CF/

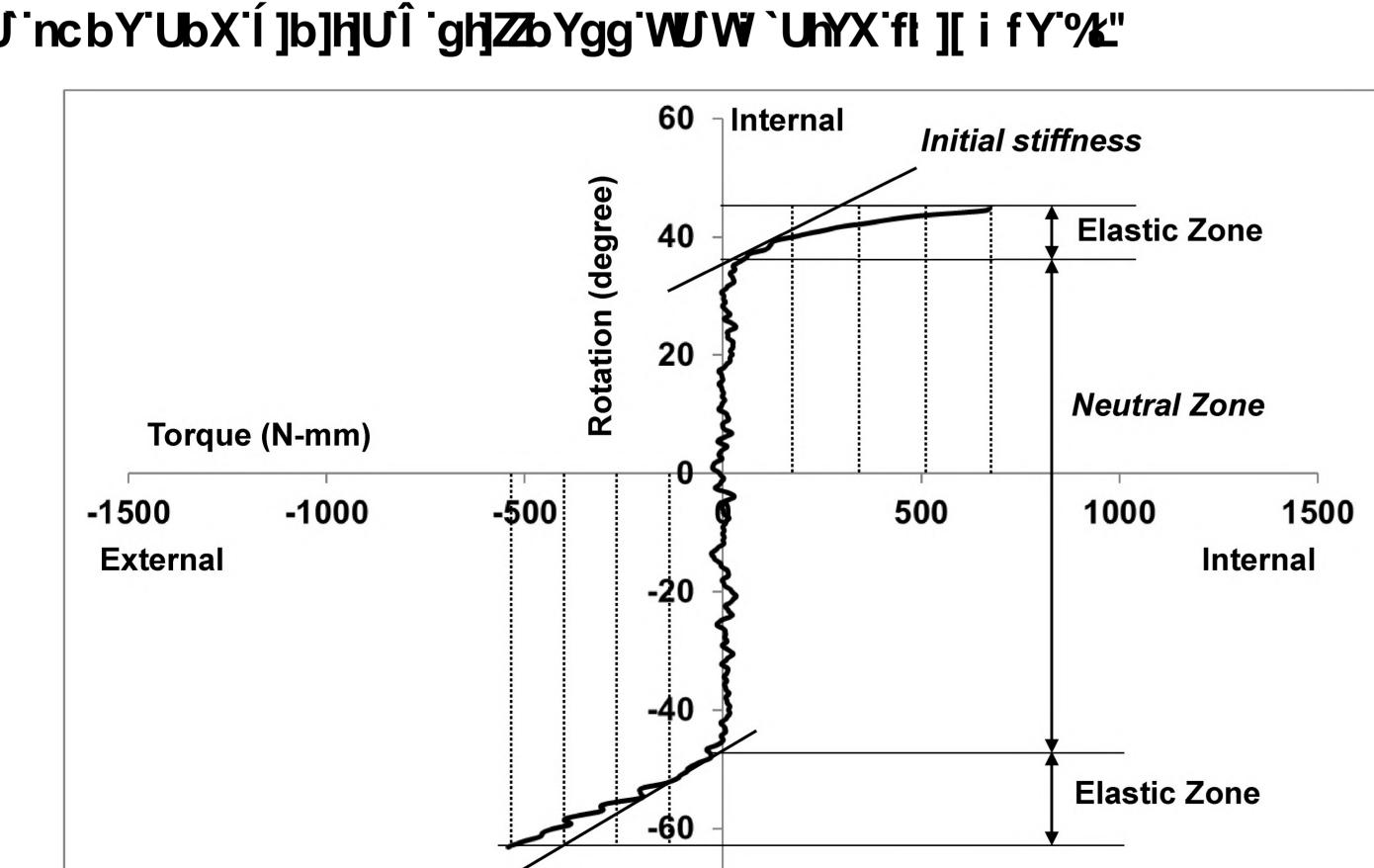


- 8]g`cWUhjcb`Uh*\$`cZUVXi Whjcb`UbX`*\$`cZYI h'fchUhjcb`cZh Y`[`Ybc\ i a YfU`^c]bhA hc`fYUNY`Ub`UbhYf]cf`lfUbg`Uh]cb`cZOf1/#&a UI "5D`k]Xh`cZh Y`[`Ybc]XŁŽ`%\$`a a QÁ ig]b['*!8C:'fcVch]WhYgh]b['gmghYa
- 9 j U i UHY Z bWjcb cZ]bHWhWUdgi `Y'Uh* \$'XY[fYYg cZ[`Ybc\ i a YfU 'UVXi WjcbžÁ Ž#'%%Ba 'fchuhjcbU' hcfei Y'k Ug'Udd`]YX'hc'h Y'\ i a Yfi gžUbX'h Y'fYgi `hjb['^c]bhA _]bYa UhjWg`k YfY`fYWcfXYX
- 5```gcZihjggi Y'YI W/dh[`Ybc\ i a YfU 'W/dgi `Y'fYa cj YX
- 9][\hZfg\!ZfcnYb`WUXUjYf]Wg\ci`XYfg`fU[Y`fUb[Y`(,!**'mYUfgL
- A Yh c Xg

8 UHJ UbU mg]g

- ; `Ybc\ i a YfƯ''c]bhk ci `X'VYVca Y'a cfY'i bgHV`Y'Zc``ck]b['a i `hjd`Y'UbhYf]cfÁ `Ybc\iaYfU`X]g`cWUjcbg`XiY'hc'WUdgi`Uf']b^if]Yg"
- <mdch Yg]g
- X]g`cWUh]cbg"
- =bjYgh][UhY`h`Y`fY`Uh]cbg\]d`VYhkYYb`h`Y`bYihfU`ncbY`Zcf`YIhYfbU`UbX`]bhYfbUÁ fchhicb'cZhY'[`Ybc\iaYfU'?c]bh'k]h'hY'Ufa'UVXiWYX'UbX'hY'biaVYf'cZUbhYf]cfÁ





Hcfei Y!fchUhjcb'WifjYg'Ë'a U "YI hYfbU'hc'a U "]bhYfbU'fchUhjcb'Q Q)QA BYilfUncbYUbX'Í]b]hJUÎ ghJZbYgg'WUW`UhYX'fl][ifY'%L"

GUa Y'hcfei Yg'k YfY'Udd`]YX'hc'g\ ci `XYf'UbX'fYgi `h]b['_]bYa Uh]Wg'k YfY'fYWcfXYXÂ Zc``ck]b['%z8z'z(z)'UbX'%\$'X]g`cWUjcbg"

; `Ybc\ i a YfU`'c]bhVYWLa Y'a cfY'i bgHV`Y'Zc``ck]b['U'&bX'UbhYf]cf'X]g`cWLh]cbÁ

G][b]ZWbW

8]g₩gg]cb

% YhYfa]bY'WUdgi `Uf'd`]WUhjcb'dfcWYXi fY'hc'fYghcfY'h Y'bYi hfU'ncbY'UbX']b]hjUÁ gh]ZbYgg`hc``Yj Y`cZ]bhWh^c]bh

: i hi fY'8]fYWjcb

:]bX]b[g`Wcbg]ghYbhk]h`dfYj]ci g`W]b]WU`gh X]Yg`!`gYj Yf]mcZ[`Ybc\ i a YfU`C5 Á UggcWJUHYX'k]h 'bi a VYf'cZdfYcdYfUhjjY'X]g`cWUhjcbg'O/Q

; `Ybc\ i a YfƯ ^c]bhVYWUa Y`a cfY`i bgHJV`Y`Zc``ck]b['&bXž) h žUbX`%\$h `X]g`cWUh]cbg 5 bh/f]cf WUdgi `Y'UddYUfg'hc 'VY']b1 fYX'ZfghUbX'h Yb'h Y'dcgh/f]cf WUdgi `Y'VUgYX'cbA]b]hJU`ghJZbYgg`XUHJ

=bWYUgY`cZ]b]hJU`'ghJZzbYgg`]b`9F`]bX]WUhY`UbhYf]cf`WUdgi`Uf`XUaU[Y =bWYUgY`cZ]b]h]U``gh]ZbYgg`]b`=F`]bX]WUhY`dcghYf]cf`WUdgi`Uf`XUaU[Y

G]nY`cZbYihfU`ncbY`]bWYUgYX`Zc``ck]b[`&bXž)h\žUbX`%\$h\`X]g`cWUh]cbg =b]hJU`ghJZzbYgg`]b`YI h'fchLhjcb`]bWYUgYX`Zc``ck]b[`&bXz̈) h`zUbX`%\$h`X]g`cWLhjcbg =b]hJU``ghJZzbYgg`]b`]bh'`fchLh]cb`]bWYUgYX`Zc``ck]b[`)h``UbX`%\$h``X]g`cWUh]cbg

FYdYUhYX!a YUgi fYg'UbU'mg]g'cZjUf]UbWY'f5BCJ5ŁWca dUfYX'a U[b]hi XY'cZbYi hfU'ncbYA UbX`]b]h]U`gh]ZbYgg`]b`YUN(`X]fYWf]cb`cZ`cUX]b[`Zc``ck]b[`YUN(`X]g`cWUh]cb`fd0\$'\$) Ł"

Ghung ghu ubu mg g

*=b]h]U`gh]Zz*bYgg`WU`W``UhYX`Ug`h`Y`a YUb`[fUX]YbhcZh`Y`hcfei Y!fchUh]cb`W`fjY`UhA h YZjfghei UfhYf cZY UghjWncbY jb Yl hYfbU UbX jbhYfbU fchUhjcb QQ

BYi htt ncbYXYZbYX'Ug'h Y'fUb[Y'cZa ch]cb'fFCAŁk \ YfY'h Y'[fUX]YbhcZh YA hcfei Y!fchUhjcb'W fj Y'k Ug'k]h]b'-\$'\$%Ba #XY[fYY'OQ

:][ifY`%'HcfeiY!fcHJh]cb`WifjY`cZgdYW]aYb`&`VYZcfY`X]g`cWUh]cb`f#bHJWh`gHJhYŁ"

Initial stiffness External -80

> 5 W_bck YX[Ya Ybhg GiddcfhZica 'h Y'5 VYfh6 ": Yf[igcbž>f'žÅ A '8 "Cfh cdUYX]W: i bX cZh Y D]hgVi f[\ A : cibXUhjcbžh Y8 YdUfha YbhcZCfh cdUYX]WA Gif[Yfm]g'[fUhYZi``mUW_bck`YX[YX"

FYZYfYbWg G/Q : fUbW/gW] \ddot{z} YhU "5 > GA \dot{a} % CCQ 7 Ua YfcbzYhU"5>GA CCSS'OQ 6 i gWUmfYhzYhU"5>GA &**Q Q DUb'UV**]">'Gd]bU'8]gcfX'%-& **Q** K]`_YžYhU"9i f'Gd]bY`>`% - + OQ 7`Uf_YžYhU"Gd]bY'&\$\$+

Xi Y'hc Wudgi `Uf]b^i f]Yg Zjfghhc UbhYf]cf Wudgi `Yzh Yb dcghYf]cf Wudgi `Y" Gif[]WU`fYdU]f`g\ci`X`VY`Wcbg]XYfYX`Zc``ck]b[`U`&bX`X]g`cWUh]cb`hc`Ujc]X`Z fh`YfÅ XUa U[Y"