(`Cft\\cdUYX]WFcVchjWg`@UV´´`)`Ai`hj!acXU] Ib]jYfg]micZD		Orthopaedic Robotics Laboratory
=bhfcXiWFjcb 5 WeighjWFUX]Uhjcb': cfWY' =a di`gY'f5F: =L']aU[]b[']g'Ub'i`hfUgcibX'hhWY b]eiY'hUh'[YbYfUhYg'UÁ `cWU]nYX'ZefWY'cbhc'h Y'hjggiY'cZ]bhYfYghUbX'h Y'fYgi`hjb['hjggiY'X]gd`UWYaYbhi]g'aYUgifYX [%] "H YÁ i hj`]hm cZ5F: =i]aU[]b[']g'bch kY``ibXYfghccX'Zef'gh]ZZžUb]gchfcd]WV]c`c[]WU'hjggiYg'giWY'UgÁ hYbXcbg"7cbjYbh]cbU'Z``!ZtUaY'5F: =i]aU[]b['ih]`]nYg'bUffck'VYUag'Zef'VYhYf']aU[Y'fYgc`ih]cbžÁ Vih`]a]hg'hY'UWeigh]WfUX]Uh]cb'ZefWY'Udd`]YX'hc'hY'hjggiY"Ai`h]!: cW]'VYUaZefa]b['U`ckg'Zef'UÁ acfY'dckYfZ``UbX'ZeWYgYX'VYUa`cZUWeigh]WfUX]Uh]cb'ZefWY"	fl][ifYg'' '/ '(Ł /5jYfU[Y'UW/cgg'U``WcbX]h]cbg Ai`h]!:cV][.'%*'–'\$"('±a	<image/> <text></text>
	Á blib4 fYX '' (±'_'%\$\$"±'A DLI	



; YfƯX'5 ": YffYf^{%{} ŽK UeUg'? \ Ư]X[%]) ŽJc`_Yf Ai gU\`^{&ž/{} Ž?Ub['?]a '^{ž/3}, ŽF]W UfX'9 "8 YVg_]^{%&}(%8 YdUfha YbhgʻcZ6]cYb[]bYYf]b[ž^{&·}Cfh cdUYX]WGi f[Yfm⁄ "`A YX]WJbY





9 j U i UhY`X]ZYfYbWYg`]b`5 F : =hYbXcb`X]gd`UWYa YbhVYZcfY`UbX`UZhYf`hYbXcb`]b^i fmi g]b[`UA i `h]! : cWJUbX': i ``!: fUa Y'5 F : =]a U[]b['UddfcUW "

AUYf]Ug'/ 'AYh cXg

[~]Á('ZiYg\!ZicnYbždcfWJbY'YIhYbgcf'hYbXcbg

Ärfcgg!gYWf]cbU`UfYU```UgYf`gWUbbYf`fBYI h9b[]bY'' 8`GWUbbYf`<8Ł



- πU Áb¹ fYX.[%])'('-'(+", ADU
- Ga U``X]ZZYfYbWY`]b`5F: =hYbXcb`X]gd`UWYa Ybh'VYZcfY`UbXÅ UZhYf']b'i fmfl][i fY'' Ł
 - /5 j YfU[Y`UWcgg`U```cUX]b[``Yj Y`g
 - Ai`h]!: cWJ. 0 \$"& ±a
 - : i ``!: fUa Y.'0'\$'%±a





ARFI displacement 10 µm 0 µm <u>:][i fY'(.</u>': i ``!: fUa Y. ``Ygg'5 F: = X]gd`UWYa Ybhk]h]b ghjZzhYbXcbÁ h Ub gi ffci bX]b[gcZhYf a i gWY'A Ai`h]!: cWJ.`\][\Yf`5F: =hYbXcbÁ X]gd`UWYa Ybh

″ÁCihdihdUfUaYhYf. 5 jYfU[Y 5 F : ≕hYbXcbÁ X]gd`UWa YbhUWcgg'' gYei YbhU']a U[Yg

8]gd`UWYa Ybha YUgi fYX'i g]b['@ci dUg'U[cf]h a &

'ġYei YbhJU']a U[YgʻcVhJ]bYX'UhYUN['ghfYgg``YjYÂ k]h ci hƯh¥f]b['h¥ghgYh d

~Á@cUX]b['@'j Y`g. \$'%z\$"&) ž\$'') ž\$''+) 'UbX'%ADU

HYbXcb^{*}k fUddYX^{*}]b^{*}a i gWY^{*}UbX^{*}cUXYX

6 YUa Zc W gYX UhY Yj Uhjcb Zc W g fB) a a Ł Zcf %\$\$\$Â WWWYg'Uh) "& $A < n'fKi fUhjcb'1'% & \pm gL$

″ÁFYgYUFWY'i`lfUgcibX'fJYfUgcb]WgžJ85G'J!%AcXYŁÁ UbX``]bYUf`UffUmlfUbgXiWfff5H@@+!(Ł

″Ái```: fUa YUbXAi`h]!: cW]5F: ==a U[]b['fl][ifY&L

&£5 F: 🚔 U[]b[

ÁCihdihdUfUaYhYf1``]bYUf'fY[]cb'acXi`ig

@cUX'hc'%\$\$B

Transducer Transducer - 20 - 30 Full-Frame

Multi-Foci

<u>:][i fY'' .</u> '5 F : =hYbXcb'X]gd`UWYa YbhXUHJf5 j ['-'G8 Ł"6 `i YÁ WfWYg`]bX]WUHY`Ai`h]!: cW]`UddfcUW("CfUb[Y'hf]Ub[`Yg`]bX]WUHYÁ : i ``!: fUa Y`UddfcUW("8Ug\YX``]bYg`]bX]WUhY`]b^i fYX`hYbXcbg

8]g₩gg]cb

″ÁAi`ŀj!: cWJ`5 F: ==a U[]b[. Bcj Y`a Yh cX'hc'[YbYfUhY`a cfY`ZcfWY`hc'X]gd`UWY`ghjZZhYbXcbg

ÁSF: =]aU[]b[`dfcj]XYg``cWU`HjggiY']bZcfaUHjcbzViHHfUX]HjcbU`migYX'Zcf`gcZhjgcHfcd]WÁ hjggi YgʻfjY"VfYUgha cXi`i gʻr%\$gʻ_DUʻjgʻhYbXcbʻa cXi`i gʻr%\$\$gʻADUL

*"*ÁAi`hj!: cWj'5 F : =ja U[]b['[YbYfUhYX'' 'hja Yg'a cfY'hYbXcb'X]gd`UWYa Ybh'h Ub': i ``!: fUa Y

ÁAU[b]hiXY`cZhYbXcb`X]gd`UWYaYbh]g`aYUgifUV`YžVih`Ygg`hUb'VfYUghUbX`UVXca]bUÁ hjggi Ygʻfl d'hc % ±a ŁO/3(Q

"Á@Uf[Yf'a U[b]hi XY'X]gd`UWYa Ybhg'a UmiX]ZZYfYbhjUhY'VYhk YYb'i b!]b1i fYX'UbX']b1i fYX'hYbXcbgžÁ Vi hZ fh Yf XYj Y cda YbhbYYXYX

/8]ZZYfYbWYg`UhWYfHJjb`gIfYgg``YjY`g`f\$"&)`UbX`\$"+)`ADUL'[fYUhYf`h`Ub`\$"&`±a`fYdYUHV]`]hm

: i hi fY'8]fYWjcbg

//Ϋ́cffY`UhY`5 F : =X]gd`UWYa Ybhg`k]h`a YWY Ub]WU`dfcdYfh]Yg`cZhYbXcbg

(ŁFYdYUh5F: ┿┓U[]b['DfchcWc`

~Á**FYdYUHV]`]m`0`\$"&±a**

// ca df Ygg]j Y``cUX]b['1'%/\$\$B'Zcf'(\$'WWYYg

' ŁA YVY Ub]VVJ 8 Ua U[Y FYdYUhHybg] Y Hyghghyd

ZcWigYg'UhU'dfYW]gY``cWUh]cb"

UWFcgg`lfUbgXiWYf`UdYfhifY`k]Xh\"Ai`h]! : cWJ`X]j]XYg`UdYfhi fY`]bhc`' `VYUa g`UbXA

<u>:][i fY'&</u> : i ``!**Z**iUa Y'i gYg'%VYUa A

ARFI displacement 10 µm

5 W_bck YX[Ya Ybhg GiddcfhZica 'h Y'l b]jYfg]micZD]htgVif[\ Gk Ubgcb GW cc`cZ9b[]bYYf]b[ž8 YdUfha YbhcZÁ 6]cYb[]bYYf]b[zCfh\cdUYX]WGif[YfmzUbXBG:!Å ; F: D'Bc"% (+, (&

F YZYf YbWYg O%QB][\h]b[UYYhU"I`hfUgcibX'=a["&\$\$\$& C&QD]bhcb'YhU''=999'HfUbg'l `lfUgcb': YffcY'YWf': fYe 7 cbffc`"&\$\$* OQ:U\YmYhU"I`HfUgcibX'AYX'6]c`"&\$\$) Ø(QB[imYb`YhŪ"I`hfUgcibX`AYX`6]c`"&\$%+

