4中國科學報

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8f 9 9 F>? @A#BCDE \$ V F #GH\$ #IJKL\$# MN O9 P9#Q Q9#9R 9 ST UV\$ #1 J W ! "# **\$%**\ X\$YZ[\]Q#^_ ` Na ()*+,-/9 bc\$ dfvFefg[\hiXa \ jkl 1 2345 89:: < = #?@\$ c mjno8epqrs R [\td uv wxy ABCA DE = F GHIJKLMF [\ #z {R\$ +|}~ #!"\$#\$% OPQ R #ST $U/VWX Y$Z[\]$ #R &')() *)bck + 5= , -b. I / O ^_ `)_abcTd W\$ Td W e#feW\$ OZ2 34C567#8 M9 : \$ <=>/0 6 #g heij klm n-opk 3qrst \$?T\ @ fAB C sfD u \]vw Oxy9z #EF\$G HI g { * | 6} z ~ ! " JK LZMN O#BCPp \$8%&'' f() * ~ eQR# ST \$

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x Rb w" Gf n r?) y z] \ st d9 DE # | } \$) + X ~ ; De QR ! "#\$)PH m D#%Wa\$Z&Tjj%%)D() i 5\$ D'1 j)D*, #+, -\$: 2 j f# Y\$ \$ f 9 9e # &. \$ @st # Rbg I aD, %p r Bo \$S

\$(1+ /f9 9 * ?O*B o 12t3 FG FD^ P" W4 5 6+07)80.)zZ .)8DK ^fV. <CR. 9* = # h:; + " < n-3 4\$9cvF kr63#ol_`\$ $! =)Rb > \%)eQR#_` $)$ >?; < n-G7'?AeQRe

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06 2021 2> 9/w8 GxMC+olm& NR34 Bz X53MC+olm >?4k < 3 k < j O 34LV9k a \$Kn#h:;+"

< n-34\$9cvFc R = MC + | CW, - } I ; E= ST H G3 # = >s ` d Go + " n - T > 73 eUQ _a1 6)tdO 81 bm&e V 8 n-%AI\AtZ)AIT[)AI! 5;)AIUQ, c; \Nf t J `\e]^ R Q2i 78 2021 m2{ * _%. 3\$g [v ak8 91 i)tu, c; v#g\$

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S W \$ R\$ 2] i %B&bz 8~\$ g w q]'(f C z 2]z)Z}; NX7 2bS*#CD\$) Gz * S#FG+,. / 0- . / 0^123 Z \$ 440 51 f 6(7j 8 a } 9)1 a ,/o)z*:;z*N;4 Gf < 'f; 5 > ?MN = hS6: ; I m ; ; # f . < /\$<'f* &6 < Pb>h B?f AI > @F xtd #g _a `C ANES awc' Dbefg gf, 8H QRVol#JT\$

STz6 X Sn-Z \$KG 5I 0 # 7MD 1Jj! 2f nCDp<' * &6 h N; 4 \$ / " 8 8 L\$Q %F #CD\$; 4 S } 3 \$ QR* BBB > Fe)QRM SNOCRb#P+\$Q\$Q ''t9# FG\$ # Rf } ~ & X S BT f XS BT \$UV e1QK34@A $W=^tuv$ X8/ O^123YU u Q X I m n-=hZ[f #B\ \$ 27 ; 7] 51 #

^f I #g\$H Wf wTd \$ T } f _ `tabK[T^ c 7Zq aWf#DdM #t \$Zefc8ST#M#t Od $\{3, Zg\} > hif \}$ $> \lor \ M\# \ Z \ j \ k \} \ I\# h W$ m& hW * \$ C: \setminus [\setminus n = dw QK t $, o \} < G pe =$ qLI r Lrs9tcm O)Ebmc "C: $u+v\sim$ 9^ _ \] wM x NOy! # DE \'zCfw x{| \$STz-.D& 81 } ~ a * &}

3 \'}Q DE $meCbqp\ \'\ Q 7'$ } c{ D~aw\' qpa 2 ! " Ng{ | #ac~ 7' \$(Lp> ?w\' 2 C%&b> aD E?VR ol nole'() Va+B, - R9we. #/i F ~\$ H{ \$ \$(#O1\$ nB 23 45 d9 #C: 6\$@7 ST a#\$(d8\$w **z** } 917 >? W '(:i C; G a/J = Jbc1 % Lp < \$;vw2< ? X89 \ _a " bE = 2 > ?G k%

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W9. X\$ $\mathsf{U}\mathsf{V}$ g9 wY STZ[VY \ f |] ^ _n-#`abc 2f d Q e9 5 f gd k u h)i j kl&QRm nop⊳ qrf W Stuvun- wxfQR V yz! {@#u (f | \$ G QR [\ ! " VT B# > V\$" 2 QR ' %& \$ () * + he_ ^ n -, 8K g w - . C /@O; n-% f %_Q R1v2kz3 4f{@ 1 v 5! f e fC {6 " ×7" f 89 \$t uv w 89f:; fC < E=>> _a" Z ?_ @AB> CD) 2

c) E; FGHCb dw QI = JK . L M) N K# CO\$2d9P^ Q tuv # CO\$T UV wxWX%Zf[1\f

\ ^] ^ V ^ a Nnf r Rb w& =d2feu\$ Eb }c f jnfTg wxQlhij k 4f ^] ^ 6f _ k mhfno∖fQ I^ (pkd q I no 4 dw Ir s uv CO\$ i g` wx\$yz { "Q | c

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2 tdO#gQ Rk{ a STz $\}$ U`k , $f = K] \wedge AI w@$ A N VTUAICOWL)z L)XpL @A 6Y! ZPC[, - G\:] ^_ ` ^ wxD c)a!bc de

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Character.AI #il_`ak v \$\$Cbc! d 10 e Character.AI MOf g m8h ic $r_/ \ \#j \ k$ 9Z] PI \$12 e MOT Dmn h op; < g | g | q < d9} < 218r i c #aDXs

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efTpA; g > 2018 hi j Tkl :kmnopn qr <st DubvwVx ykopmz | { | }) kOz H, -: ~ [= ! vorj r, " #) k\$mz!" #6cU~[r, %&('(I) h\$"

_ II?@_) #*U <= fg~[r,

oTqr - { T. 9: /u<01M 2Z73/-V43!#*56789 $!:] [{ : < e = , = " #$80] 6}$ u' X * \$ < op # \$ > = ? 8@d@A $\# * \ \ BX + , \ CDe = , \ EF8$

GV73e = #\$HI < !J = KP@ALMINNU! 6@A, OPDKQD) HR(P=>ST< j ["UVWP, D]/; X. YZ, @A D=P:k: [@An Tpk \ [@Ar%k] @^@AnD67 _ `DLM8Xa≪Abcd?DdPZe { j], ! <d67KP@ALM8

@ALM, bv-: fM<\", + *6gh<ijbvHTDP6\]k Iq, +, &efm noApqrstu %vwgorxbkQ] ^_yzI +T a $!(\{i < P | =\} \sim (/, \{i Z \}))$ e + < - - ,] ! Ze +) nQ] " @A#CdI, ! #\$ P $kM#H$n % = [-: %&} ~, !$

EQ<(&m' 6() # * U<- : * # * + " &m:k, - I . , / OU1 no D= \ \(\ \ \ \ \ \ \) \(23-45, 65 78%9: ; <' 6∢mX6' 6, krq ! l . b = fg + , 8 > l < ?(!), I @ABDCD? @ABC, nEFI.

#<DPY" | #V8

H-Ga, ! kPH-: %&I J, 8 ! #\$KLkMNn< Oh - QP < Q" R! ScTUG8VQ<s@AWX B < Y (! &mZ[m9kr]@A , \&<| EI >?@!, @Akrq8 ^WP_`DaDocEFHdgev∢ fg ! @A&U<2>hi \\ &I { * +qYDajDnkDZ[H@aGI,R E∢mn@Ai >&H8

+U<Jc6@Am9ow, pcq r <sGd" Oi &' D#\$, 788(!, &mi tH<uvwxkl], yz "{ ≪ | 8yzqN" (: E} ~ 8 (! " v < ONz #% ! \$E; y

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i 73D45H) `678 ! 9: H8 ; a <D+<=>; , !?@b∨< A; 9: <z#" 5?, (: B18 ★ C R dkDEF\GR n E<z# H] 2>" I:) J D7886>KLM <, 78! ' 6<z#N" 00, PQ!

RS8z #, V(c! Px48%T = UV<\ HW, P?k@-8 Q] z#; XO; , yP-Up, '

-: [\< v 8

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