

上海交通大学

2018 12! 10 "
43 \$%&# 324

SHANGHAI INSTITUTE OF TECHNOLOGY NEWS

!" _!"B> I v ! } JK r% ; ^ 2 L
^ %6 & ~q P 20181D M;C# NO T P m^`
B>. _ _• 2 v! n a QR b ST no b ^ 2
o " ybK w#" #/~) U}" ' ' . _ D2 /
34 \$%& Lb UB> ' ' &;VW 5 %HX/q Y
() p *† PVD (/ _• ; Z 5^_9 [b|
r u 01 . _ _• 2 v \ ;]^ I _` ;a ^ 5 %
! Y B> n 2,34- m _• Qb ;7 U[l cdX
567 I] # 89& Lb ae\$%_`a QR b
UB> n ;;<2= . _ c[qi Aef 2> . _ v
_• 2 v ! YR 2> . ! 9 ?@A " . g] # p
_ v ! 9 ?@A A 20181 q 0 ^ 0 hijkl Q ^
B "] #UC=C I u DE no < P b\$ 02 mn
F s G Y. _ 2 v ! Y `a Pmc[op "# 4 q
@H" y no "] #/~ o7 U] # ^ 2 `a u 9
34 \$% b I YF. _ v [| DQR "m. r Q] #
! \ DR 3> A C< ` Pst E 0 no A
B> I . _ _• 2 ,-.%&

!" 12 5! #
\$%&'()*+,-.
/01234"456#
7%89: ;\$%9:<
=>?@ A
4B"<=>CDE
BFGHIJ "KLE0
#MNO*+,-./(
)PQRSTA TUV\$%
WXYZ[\]01^4
1_`a9:bc[de

IJ"fgfhijk0
1CDlmn() opY
Z;qr7st[umn
()vwxyz{IJ ;
|/}-/}RS/~•
!" bc[# \$ " %&
'()* "+,&-) . A
/ 4 012 MNO#
\$% 34 b*+,-PQ
./()RSQ 5 E23 A
!#\$% &

!" '()*+&
11 30! 67 "89 # :
; 9 < B101L =>?@
AB 7b CDEFG v
HB> IJCKL %1 4
%1 ;B> I89: %9
: MNOPQR # ST
UVW v XY ZUVW8
9Y~ [0 \] #UVW
v XY_` B abcd A
#7%9: efg ?@"

#7%89: hijk
B "0# ^_lmnop
qr Y stuvw UVW
v XY^_ b0 xyzS
^ A
89({} B> no
VW~• b ! " "# V
W\$% /~ &' b () "
*U+, V- Y. k / "0
123 @45678 "9
~ : :89 ;< k b K=

&>? A@S^_ v"
MNO AB 89 b CD ;
ED I FD b? G"• H
< IJ @KL 89 " IJ
MLCN B OP 89 b C
QR "~ tx /E STU
VA
* efgsT I 4S
TUVW v X YWX "Y Z
Z B C # [o b01 CD
E I J ^_ \] ' ^ _ K

1 "ABU^_`aH <P
b x \$ \Y ac \VW~
•/~• de) f \X g
G h /VW v Xno YR
? G" g ijk T^ b "I
m# nop f q l sT ;
5 %r%s a ;i , 7 m
^ t " um # # p pq 0
^ ^ v b wp 0 x " y R
0 x z({} A

,7'(89:;< &~ M0 x . /~ R%^ v vb
QK bZ UC#b l b GDn K1 " @4 v " ~+9 4b
o " ' Mac FC#0 x bIJ k " 9Uv Yf " ~• H AU]
{ { 6v HB> l %z CYv - w v ~^ v c 4 b " Y•
HB> ls G| x ./% 1 4 ;] Xy{ }K f G< " " }K
B> ls G%1 4? } b U~• f V A] Ws 9 C k Q
O9 B> E0 x # 9 4 Y l " n c' M] c E0 x b ~•
, bP 11 18! @ E0 k , RY". Y# 9 4".
EUG <u} A ![A b ^ k b
U B5 "p "a b } BP~1 b, R/ ZR" }E
e_ < i] c Ox 0 x b) l ~•, RA
b "hi [u ML - l YA6] # \$ k " C*
. ; n 0^ v b~ i XA Ob / "um
l hi # " ` &4 ~• b, R"N A\$ - w[
9 4? G" 9 Wb V"8
n @ UG <# A
ef , b "] # mRp n 0
. ^ v "140p 0 xFG] # #
Z 9 4b 9 , A 2= 0 L E

```

#%&'()+,;
/0123456789:
0#U D r o lst 3
"GRPIJ 7 m89 ;# n 8
9Q ^ 89 b NE 89 h "g
9 E t kb { 1 ; { ' _ ; { ^ _
G0lms GUKA
1.7 m89 ( H' ^ _ l
mUuSu { Ast 3 } >
3./ m: ()b [ [ = HA0
# 4 RT 7% 1 K ^ t 7 m
YZ mn 9 ; W5m ~?
st() Y b ^ l m n o /
UuA * B ? 6n " { E l b
m7 ./ % 1 4 ; ^ _ l m s G
s 0- J ^ t s ; ^ _ l m s
Gs 0- J d t % 1 4 ; ^ _ l
ms Gs 0- J } 6 . ; 7% s
t ./ Y ; ^ _ l m n o c 7
L Y ; ^ _ l m - ^ _ n o 4
R # 7 m ^ t { 1 # / "
7% 9 # 8 ? ( "& ' l b s
G ; s 0 . / b # ^ t * ( 7
% z C Y 7 % st ./ Y ; s +
a ; # $ l ? p 0 L R Y Z Wu
p MF0 L { R P Q ~ ^ _ l
m - J . / b m : ) * Y R E m
. 3 J A
2.0 ^ 8 b # n 5 9 ^ _ `
k x a k t UA0# + z P Q
0 ^ o k # # n U H o b ^
_ l m G 0 U 0 A 0 # J K e
# $ l ? p 0 L n o "# $ l ? p
0 L l m ^ s t / O F 0 L ^ _
l m n o 4 K K " H n v 3
f % ^ _ l m G 0 " H n 2
u { s 0 E l ^ _ , "> 3 M
m ^ _ / l m ^ U n P n 5 ; m n
G 0 Y P A / e n c 0 # s
t K ' ^ 2 ; s 0 4 ( D * U ^
_ l m Y b ( * 2 l ) f v w "
0 0 \ * f % ^ s t u } m
* X e X b U ^ _ l m Y 6 '
^ A 0 # p 0 ^ s t + z / # #
n f q s T U 5 Y ' l K f %
" T : m n K / s 0 )
* S u " I J E H n ; H V ; H b
^ _ l m s G ` k A
3. ^ t g 4 ? b P Q " ^ _ l
m q Y i % q A ^ t g 4 } >
3 ./ a ^ & ' b c [ A 0
# 7 m ? [ ^ t C D c + " *
Y W ; * ( ) ; * S ^ " H
n r Q ^ _ l m n o Y R E k
b e / s A 0 # 7 m u ] !
Y y U 9 : ( l m ^ _ ; # 8
( ^ _ l m Y A # 7 % 9 : e f g
n f ? @ & ' ^ _ l m - J
^ t s ; ^ _ l m - J d t %
1 4 9 1 4 5 " / P 0 x [ S
~ v X ! J # ^ _ " / P { # U v X
0 V * _ 0 x [ f T ^ " / P {

```

```

# a x 3 v STJK l m ^
R A B > l s % ? . ; ] # N 7 %
8 9 # 8 g n " f k B
y ? @ ^ _ l m n o . / P Q 4
5 " @ # $ l ? p 0 L s t v 2
^ _ l m j e f G b 1 " ( ) 2
( ) U P Y b ^ _ l m .
/ ( l A # 8 v w x n [ , 0
# ^ _ l m { [ m l " G [ m
k A # ^ t f ( ) - ^ _ ^
" f ( ) 0 L V 2 d t - J
./ " 3 4 P Q ^ _ l m - J .
/ b m : ' ' A
4 p F Y Z ( ( ) B 6 m
R A E A q Y Y Z b H R m
/ } 3 ./ t X & ' b q A
@ # 7 m 1 K Y W 6 " 7 % z C
Y 7 % s t ./ Y ; s + a ; #
$ l ? p 0 L R ^ _ l m ? [ P
Q Y Z u ^ _ l m - J } 6 . g
9 E { \ 4 u D " b g u l
& ) * v b P U = " ^ v ;
D P Q . / ( ) I W d
t A p M F 0 L 7 m u ^ _
l m n o . / V ) . / c - " /
O T . / n Y W ; n ( ) " c U
D * ^ _ ) * b d t l r Q .
/ " 9 ~ ^ _ l m ) * b q Y c
' & 0 L 7 a L 9 : ; L 8 "
* . - ^ _ ( h 0 " ~ ^
_ n o ) E U , R A 0 # "
u ^ _ l m ) * R S / ~ c E
5 R = y V ) E 2 0 1 8 1 * M F
0 L 1 D / | t A
5 m E s t Z R # / " ) -
J + z X C A m E s t } ) * ^
_ l m b q Y ? U A 2 0 1 8 1 0 #
f v > { ^ _ l m - ^
_ " q [ ) M E - . / j g R
E { Y M F 0 L A @ e ' _ v "
X b s t \ ' R " W ) v ^
_ l m - ~ " z { G e [ +
z f & K ! Z ) - A " Y ~
Q K b ) * ^ _ l m n o { E
k b q A
; $ = > ? ) @ A B C )
/ 0 D 3 D E F G H 7 I J
0 # 7 m 4 ( ) m n ( )
^ _ l m - J I J " ( ) & 2
] # } 0 { % / 0 h i j z U
{ % " h > . k [ u ^ _ l m n
o . / / 0 # b } 0 { % l P s
t 0 h i j N 5 9 Y X "
( ) ( ) U P Y b ^ _ l m
n o - J ( l " ) y u " { , %
r Q ^ _ l m / Q ( & ' A
1 . P Q ( ) U P Y b B
P ^ _ l m ( l A 0 # 7 m u
E K " h > U V E U P Y b
^ _ l m ( l A U P Y }
d ^ _ l m { $ i ; S % i
# # $ l ? p ( * R l m

```

```

) s ; ^ Z v " ? } [ # # $
l ? p ( * R l m / B > P
s _ * E 0 b U } 0 2 e 0 ^ 2
3 f ; % 2 - ; ^ _ 2 k Y R 5 9
Y X " 0 # ; 0 ^ f ; % ; ^ _
Z v b I J j = " u P n U B P
E 2 3 Y b l m A Y "
q P 0 # ) 6 l ! 2 V u b
m ^ 0 l m b a k Z ;
V Z ; z j Z A ~ e " @ ^ _
l m ) * _ v " p F s p %
s t c m n U P Y b
l m ( l " @ j @ N m 0 h i j
, b . 6 " ; 9 ( b
, h o x Q l m " H ^ _ l
- G m x l R ; G m B P ; G
m a A
2.4 R I J m U B P + 3 Y
b 0 V - J ^ _ A 0 # ^ _ l m
n o " c 5 9 0 ^ f % & ' ; 5
9 0 x } 9 j , ; 5 9 0 #
l m b l m A K } & e
# $ l ? p 0 L u O ^ _ n o a
^ / s A ~ B > l e # $ l
? p 0 L " 0 # # $ l ? p ( *
0 ^ * l b m 7 ( * ^ & 4 c
[ L / s A @ . / P Q v " # $
l ? p 0 L 4 c Z U E 3 Z U #
$ l ? p ^ _ Y l ~ v X ! J # ^
_ n o A ~ v X ! J # ^ _ v
E
X * 3 4 ; d c . v X
x 0 # ^ t ; p q 0 L s t R #
# n f q T ^ " . [ ~ t k A M
} & 0 ^ a ; P k 0 1 m n 7
b C D E I J f G ^ _ A 7 b C
D E & ' / " 0 # 5 9 P s t 0
^ a ; l f % 2 3 " u c u 7 b
a 2 9 [ | D ~ l m ^ b s
0 # $ " o E ~ V W v X # ^ _ "
J K 0 # D 0 . _ ; C = C l ; x
g R a ; 0 ^ " A B U 3 x $ Y ;
U ` x $ Y J V W n : Y J V W
~ * Y R # $ # # p m q 0 L L
8 ; U ( s T 0 x H n T ^ " "
R B > l m q , / b ^ t l f
q # / T ^ " P b E 7 b C D E
I J Q s 2 Q ^ Q 4 ./ A
N } C < ` P s _ * 0 h i
j I J } 9 j ^ _ A 0 # " w
v X 2 3 S 4 ? p u D ] l ^
_ a & ' c d " @ } 9 j ^
n o v q U P s _ * 0 h Y j
[ , " o E ~ v X F _ * # v
X F _ * # U K g K _ Y G n
# ] l ' O ; N q R G
D # D S # R ^ _ " V k _ *
/ b ^ 0 # : l v X 0 b ! " "
u P m F G X b _ * l b l l
, = C T B 0 x " i j 0 x $ =
^ 0 _ * a / M P m b
G D j A p E ? * [ U W u L
% 3 4 6 a [ U 2 B C E

```

```

D ; E A b L A
3 . l ! i U ' @ Y b ^
_ l m G 0 < A 0 # 7 m f U
V " ^ _ l m c U ' @
U Y * } D Y A 0 # @ U V ( )
U " ; < 0 Y M [ . + ; i j ; !
U V { / & ' b v X 2 3 S 4 ?
p = % n o x l q 0 ~ 1 ^
b . 6 " [ , p f % P G Z

```



| " i b S b \ ` 0b R " R m b "; 9
 _ "] R B P E 3 9 \ N m < ^ b 9 W T R 3 2
 A] m 9 ~ K p C v x b c Y l " i b K Y "] X R
 " 2 ' P 1 A b n 0 Y E B P E A
 : X b E 0 x , U c "] K J K f E 0 x , " 4 b
 { E / % b " 0 i # Z Z R P + G A V W s t b 0
 S 4 , b \ ' p p b 0 Y ! 2] b o n P b
 c n b i H K @ 0 8 Z R \ • E 0 ^ b
 b " - K = o s t c ` _ 0 "] ! @
 b " N 9 " @ ^ @ R T c " n 0 c K Y " A
 ! B 4 Q) C
 N 1 F / " c b ^ % - 0 4 b Z " } • q ~ b l
 { ') X " i 2 q - l A B > b * Q J l =
 b A P K b R E 0 "] { m = " { W @ q ~ " . * 1 0 0
 . < " " s R N) / " ! ! } 4 4 -- = q A
 v b ") K f f R m b i = " k K H b
 c f A b 6 ? A]] ! l * (} C N @ 3 " j k Z b
 P "] y R E B P E b } R] q " @ ^ 4
 & K w 9 " ! R ! 4 b] b 1 U = " Y > b |
) K p E 0 x E] M b b E V "

, } A v c " X } y
 q ^ b \] C C ^ " \$ K ` R ; 9 < " { ' A] ` _ F c " 2 ` Q K
 & M B P E b i E N b " & c @ A i ! R ` A]) _ b "{
 " P } m K b k " E Z b l " • i b " m ("
 l N C B b " * ' ! " { m " ! V W A] i
 b l R m b . B " 8 9 b) B b # { K " Y K @ < 6 " E k & ") ^ 4
 q - G Z " P * (/ - K 0] { = T A 9 6 9 " b R 0 y b c U
 B P E b 8 0 G Z N E A b c " 8 @ K + K J • V k A Y] [s K X Y
 l . k K Y * " B P E / b " 9 4 3 ; 3 ; , * 6 b] A
 *] b R o l n 0 K Y * e 3 b @ B " ' Y j " } 0 L
) "& V * (5 4 5 b] V o 3 b n : & 4 K " V z _ A _ b < 4 -- }
 l n K Y ~ C Z c " E A c + 1 A " K 2 l E 5 5 X " , _ b 7 #
 E 0 x , U { ~ 0 w Y b K / K b < " e F b = u / P ' r r H e b V
 b ` /) t \$ @ & " 3 b " % b x S A 0] 0 ! 7 "] { Y
 9 E] / B P E b 9 " m y b E { H e A P X A ; Y Q " B 4 h b
 m 4 " m m A F b / h }] k b " K " E " b ! |
] B P E b ! = h m m ' e c \ l 9 E (3 " A 4 J " * b = u @ P
 " \ 0 K i 0 K > a b] @ < b " & k ^ b] A
 } P ~• 1 " * A] b] 3 a E " (_ b T 4 2 ; 9 < k Z "
 "{ (e 1 (i • + 4 " { - O ' 0 K >] [_ 9 ^ == E A

* 1 < " ' A K ! { Q c X o] b V k c " Q
 = " X { u] k ' " 2 9 A + 9 " ' E 2
 E i A d " c A ' E " 阑珊 a "] = J " "
 0 l = " X { u F " 2 i } 0 \ A
 E " E o K 0 " " R m x , 2 } Y " R *] " K
 k k p , " 2 9 E ' A 0 l E " K 0 _ E " K
 N " 0 > 0 ! v 2 m K ? K u 旅 5 " { 4 w K
 & " 4 K > { Q b 0 " B 置 b % 置 O P 谁 " u { 4 w 谁
 { p ' " / { p w A] (, ' 4 * (久 A 甚至 { 楚 " @
 b 0 " u K \ @ e b M L 某 K _ " 某 K | 角 " 邂逅 b "
 ^ " i " @ 3 l A m = l b 逢 b " # 4 } 谁 ?
 R W " ! + b > 0 : 擦 肩 b ' " 谁 } 谁 b 0 ?
 Q l A " } / "] K " 剩 6 K > 0
 (y U Y K x " a m b 蹊 蹊 独 5 A
 K 0 " } ' 6 b] c / • 5 b c
 " } [b " } " P B 0 4 \$ = v ` P h i A
 * h b _ A P Y 0 " # N l K 0 " } ~ E / ; K
 9 ~ ' " n * (" m K i u [0 b { \ ? " ? M m b ' "
 # x l) " B A c " 7 ~ K G k b l A p m x l
 " # ` (@ 哪 ^ ? Y b 旅 v a m K a }] " #] c
 x l ^ 0 X 0] " i p w a m K > 0 " w] c
 " i o i l " "] c | A
 i 遗 5 A] m ' b }] "

CK ") v % 斥 4 @ =
 + 喻 b 躁 b " 尤 O } \] E R b
] c " G } @ H 1 * (E 0 x
 , b (z A ^ G B b X
 " P 0 i J 忙 忙 碌 碌 " K i 5
 / 2 : { * (E
 V 4 E G A
 } } Y 0 \ B h k h { |
 2 b A Y } b W F " u } * ()
 b b A p 比 P O T K \ H 1 b
 n 0 "] Y b (/ E " P ! g " 挺
 k b " N } p ~ { | 0 b 缘
 ! " N } p ~ [| b Z f
 % ^] 2 { 陌 x A
 T ' • P | 2] G b }
 4 K b g D " P] [B
 E " u - K 枪 A] P 掉 E K
 \ ^

7 j W b , h ' M " / 5 c b i , " u } @ ^ " ' _ ~ ? " = c @ ! w) Q
 M) x , Q 5 " # / T p A Y > O 5 4 " e P A f 7 L I 9
 N C 1 9 8 b M @ l Z b . m 4 b " @ Y ^ T 4 { n b o p " J K f
 A - w b " " } > { = b " O } l Z H - @ m u
 @ B @ =) " @ / " , 4 T # * B O 7 " { J a Y E o l
 4 n b " K z z (K 4 " , 4 T 5 s * M f } p ~ 0 c \] { Z P
 b] i ? ' " T & (O j b _ A Y > 7 L b J 7 E " X 7 L b 0 X "
 M " * (O) \$: ' ' " i ^ > 2 } i " # 0 c * 3 P I J H O (- E > b 5
 W { B b " @ d | 7 j b | 4 Z v " u # 0 c U K " K > c F 4 7 L b R (? 5 A
 A R x , g A J 4 z B K z z Z [, b q @ 7 v O 7 " T 9 U
 7 j A B 4 / B K z z Z [, b q \ / " } B T v Y b . [" u } Y Y 7 j b K
 M 0 ' " S + E T c • b / b ' " v b 0 ' @ s E 2 3 " @ S + ! = b n c " u :
 P 7 H n b , W u 0 Z @ b 7 j ^ " T 4 * E 7 b & ' A 7 O o 1
 b p A # 0 T i (b " k E \$ " J R E 1 b * { G a " P I 7 b 0 {
 ' P # ' (l A c R E \$ " " 2 } W { B b
 ! ~ U X " b q b c K { 2 k T " @ ~• 1 " K " 9 ~ 0 c ! v { .
 [E " { [~ M 3 A H @ > V W y b d Z u b A
 [p ~ E X " K @ > V W y b d Z U Y 3 0 b i < c h Q
 { { 4 l R] A Y v A 7 L " } E " / 1 5 " @ 7 ^ " F K \ 5 E A Y
 K f R " T b i % 2 5 c F b 8 0 u 2 e " M m M) M L ^ " @ 0 > 0 ! v " 2 m
 m E E b - l " 0 c • T b g b K \ " 2 9 - E K > u W { K > O P * (b i 7 L " |
 D u l W i i A T @ # B b A 8 4 M m] c { W B b A
 b 7 L ^ 4 " } \$ 5 T g h B X J " 7 v
 T l K Y p D ' 4 ' _ I M @ > c @ " W

孙庆
二
X