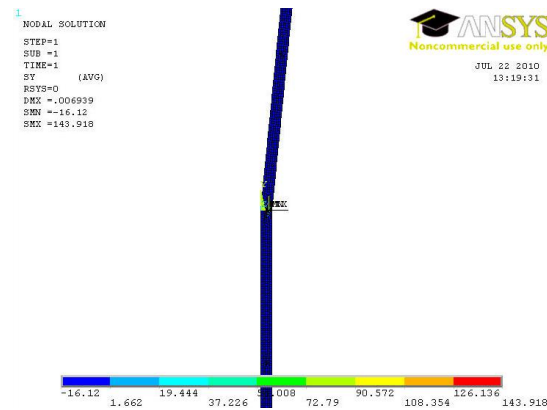
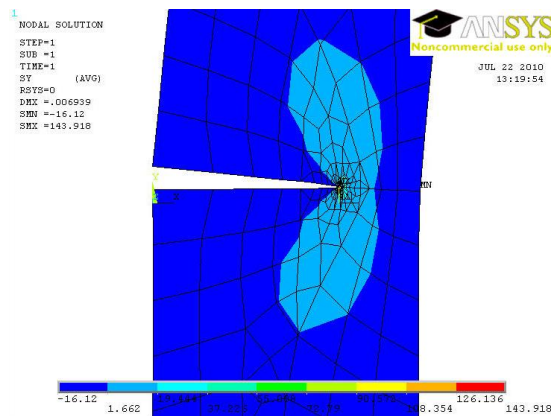


**The macro of mode-I edge crack under uniform tension loading for KSCON™ model**  
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!!! This macro is used to solve mode-I edge crack problems in a

!!! semi-infinite strip under uniform tension loadings.

!!! The parameters/variables taken by the macro are:

!!! P : Uniform tension loading

!!! CR\_L : Crack length

!!! WW : Plate width

!!! HH: 1/2 height of plate

!!! NEL\_THET : Elements numbers at  $\theta$  angle direction

!!! CONSTANT : Crack length to plate width ratio

!!! CRFACE\_LESIZE : Elements distribution ratio in the crack surface

!!! R\_SIZE\_RATIO : Distance ratio between elements at radial direction of crack  
! zone

!!! R\_F : Size of first circular element in the crack zone

!!! R\_F1 : Size of three circular elements in the crack zone

P=1

CR\_L=1

CONSTANT=0.7

WW= CR\_L /CONSTANT

```
HH=40
NEL_THET=18
CRFACE_LESİZE=0.2
R_SIZE_RATIO=1
R_F=0.01
R_F1=R_F*3
TO_1= CR_L/10E6
TO=CR_L- TO_1
/PREP7
ET,1,PLANE82
MP,EX,1,30E4
MP,NUXY,1,0.3
K,1,
K,2,,HH
K,3,WW,HH
K,4,WW
K,5,CR_L
L,1,2
L,2,3
L,3,4
L,4,5
L,5,1
AL,1,2,3,4,5
APLOT
ASEL,NONE
LSEL,NONE
KSEL,NONE
```

K,6,  
K,7,, -HH  
K,8,WW, -HH  
K,9,WW  
K,10,CR\_L  
L,6,7  
L,7,8  
L,8,9  
L,9,10  
L,10,6  
AL,6,7,8,9,10  
ALLSEL  
APLOT  
KSEL,,LOC,Y, - TO\_1, TO\_1  
KSEL,U,LOC,X, - TO\_1, TO  
NUMMRG,KP  
ALLSEL,,KP  
APLOT  
ESIZE,0.3  
LESIZE,5, CRFACE\_LESIZE  
LESIZE,10, CRFACE\_LESIZE  
KSCON,5, R\_F,1, NEL\_THET, R\_SIZE\_RATIO  
AMESH,1  
AMESH,2  
DK,8,UY,0  
DK,7,UX,0  
DK,7,UY,0

```
SFL,2,PRES,-P
SFL,7,PRES,-P
SAVE
/SOLU
SOLVE
/POST1
PLNSOL,S,Y
/EDGE,1,1
REPLOT
CLOCAL,11,1,CR_L,0,0
NSEL,,LOC,X,- CR_L/10E6, CR_L/10E6
*GET,NN1,NODE,0,NUM,MAX
NSEL,,LOC,Y,180+0.01,180-180/NEL_THET-0.01
NSEL,R,LOC,X,-0.001,R_F+R_F/100
NSEL,A,LOC,X,-0.001,0.001
ESLN,,1
NSEL,R,LOC,X,R_F/4-R_F/100,R_F/4+R_F/100
NSEL,R,LOC,Y,180+0.01,180-0.01
NSLE,R
*GET,NN2,NODE,0,NUM,MAX
NSEL,,LOC,Y,180+0.01,180-180/NEL_THET-0.01
NSEL,R,LOC,X,-0.001,R_F+R_F/100
NSEL,A,LOC,X,-0.001,0.001
ESLN,,1
NSEL,R,LOC,X,R_F-R_F/100,R_F+R_F/100
NSEL,R,LOC,Y,180+0.01,180-0.01
NSLE,R
```

```
*GET,NN3,NODE,0,NUM,MAX
NSEL,,LOC,Y,-180-0.01,-180+180/NEL_THET+0.01
NSEL,R,LOC,X,-0.001,R_F+R_F/100
NSEL,A,LOC,X,-0.001,0.001
ESLN,,1
NSEL,R,LOC,X,R_F/4-R_F/100,R_F/4+R_F/100
NSEL,R,LOC,Y,-180-0.01,-180+0.01
NSLE,R
*GET,NN4,NODE,0,NUM,MAX
NSEL,,LOC,Y,-180-0.01,-180+180/NEL_THET+0.01
NSEL,R,LOC,X,-0.001,R_F+R_F/100
NSEL,A,LOC,X,-0.001,0.001
ESLN,,1
NSEL,R,LOC,X,R_F-R_F/100,R_F+R_F/100
NSEL,R,LOC,Y,-180-0.01,-180+0.01
NSLE,R
*GET,NN5,NODE,0,NUM,MAX
CSYS,0
/POST1
ALLSEL
PATH,K1,5,,30,20
PPATH,1,NN1
PPATH,2,NN2
PPATH,3,NN3
PPATH,4,NN4
PPATH,5,NN5
KCALC,1,1,3
```

!!! KCALC : Calculation of stress intensity factor (K1)