

RUOTA_3D_solid185

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FINISH
/CLEAR
C*****
*****
C***
C*** RUOTA ANALIZZATA CON MODELLO 3D
C***
C*** PARAMETRI
C***
DA=90          ! diametro albero
DM=130         ! diametro mozzo
DB=350         ! diametro anello esterno
DR=400         ! diametro ruota
LA=200         ! lunghezza albero
LM=130         ! lunghezza mozzo
LR=120         ! lunghezza anello esterno
RR=15          ! raggio raccordo
SC=50          ! spessore cartella
FR=20000       ! carico

/PREP7
C***
C*** TIPO DI ELEMENTO E MATERIALE
C***
MP,EX,1,205000
MP,PRXY,1,0.3
ET,1,182      ! elemento piano per mesh area
ET,2,185,,3   ! elemento solido

C***
C*** KEYPOINTS
C***
K,1,
K,2,DA/2
K,3,DA/2,LA/2
K,4,0,LA/2
K,5,DR/2
K,6,DR/2,LR/2
K,7,DB/2,LR/2
K,8,DB/2,SC/2
K,9,DM/2,SC/2
K,10,DM/2,LM/2
K,11,DA/2,LM/2
C***
C*** LINEE
C***
L,1,2
L,2,11
L,11,3
L,3,4
L,4,1
L,2,5
L,5,6
L,6,7
L,7,8
L,8,9
L,9,10
L,10,11
C***
C*** RACCORDI
C***
LSEL,,LOC,X,DM/2+0.1,DB/2-0.1
LSEL,R,LOC,Y,0.1,SC/2+0.1
*GET,NL1,LINE,,NUM,MAX
LSEL,,LOC,X,DB/2-0.1,DB/2+0.1
LSEL,R,LOC,Y,SC/2-0.1,LR/2+0.1
*GET,NL2,LINE,,NUM,MAX
LSEL,ALL

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LFILLT,NL1,NL2,RR
LSEL,,LOC,X,DM/2-0.1,DM/2+0.1
LSEL,R,LOC,Y,SC/2-0.1,LM/2+0.1
*GET,NL2,LINE,,NUM,MAX
LSEL,ALL
LFILLT,NL1,NL2,RR
C***
C*** AREE
C***
LSEL,,LOC,X,DA/2-0.1,99999
LSEL,R,LOC,Y,-0.1,LM/2+0.01
AL,ALL
LSEL,,LOC,X,-0.1,DA/2+0.01
AL,ALL
C***
C*** ELEMENTI
C***
SMRTSIZE,3
AMESH,ALL ! mesh dell'area
TYPE,2
C***
C*** VOLUMI
C***
EXTOPT,ON !simile a LATT
EXTOPT,ESIZE,18,4 !numero divisioni e rapporto dim 1/4 ruota caricata
VROTAT,1,2,,,,,1,4,90
ASEL,,LOC,X,-0.001,0.001
EXTOPT,ESIZE,10 !numero divisioni dim 1/4 ruota non caricata
VROTAT,ALL,,,,,1,4,90
ASEL,ALL

C***
C*** VINCOLI
C***
ASEL,,LOC,Y,-0.1,0.01 ! vincoli di simmetria sul piano medio
DA,ALL,SYMM
ASEL,,LOC,Z,-0.1,0.01 ! vincoli di simmetria sul piano assiale
DA,ALL,SYMM
DTRAN
ASEL,ALL
!SEL,,LOC,Z,-1,0.001 ! vincoli sull'asse
!SEL,R,LOC,X,-0.001,0.001
D! ,ALL,,UX,0
!SEL,ALL
C***
C*** CARICHI
C***
NSEL,,LOC,Z,-1,0.001 ! seleziona i nodi
NSEL,R,LOC,X,DR/2-0.001,DR/2+1
*GET,NN,NODE,,COUNT ! conta i nodi
F,ALL,FX,-FR/4/(NN-1)/2 ! carico sui nodi di estremità
NSEL,R,LOC,Y,0.001,LR/2-0.001
FDELE,ALL,ALL
F,ALL,FX,-FR/4/(NN-1) ! carico sui nodi di mezzeria (sovrascrive le forze)
NSEL,ALL
FINISH

C***
C*** SOLUZIONE
C***
/SOLU
SOLVE
FINISH

C***
C*** POSTP-PROCESSING
C***
/POST1

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PLNSOL,S,X

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