



- , -
• • •

()

()

-

,

. . .

()

()

133

-

3

11

2019

2019

539.3/4
64

2 18 2019 .

:

• • , • • , " • -

• • , • • , -

64

(): .

()

133

; • • - • - • • ; ∴ • • ,
• • , • • , • • „- , 2019. - 12 .

"

()" -

Ansys Workbench.

133

()

(. .): • • , - • • , • • .

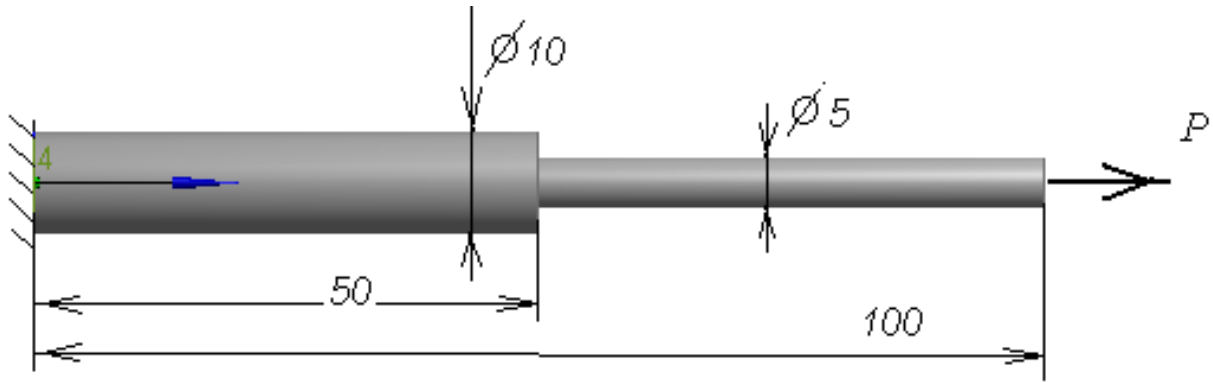
© • • , • • ,

© • • , 2019

, , -
 , -
 . -
 (CAD - Computer Aids Design), -
 (CAM - Computer Aids Manufacturing) -
 (CAE - Computer Aids Engineering). CAD/CAM -
 AutoCAD, DUCT, Pro/Engineer, Unigraphics SolidsWorks -
 , ,
 . ANSYS,
 . ANSYS
 . ANSYS , -
 ; CAD- ; -
 ; -
 , . - ,
 , - ,
 .

Static Structural

Ansys Workbench.



1. .
- 1.1. () -
- 6 (, *F:\LabANSYS_7*). -
- 1.2. **Workbench.** : -
- Пуск → Програму → AnsysWorkbench → Save as
(**Toolbox**)
(**Project Schematic**) .
- 1.3. - .
- Main menu → Units → Metric
- 1.4. .
- Toolbox → Analysis system → Static structural

• **Engineering Data** –

;

• **Geometry** –

;

• **Model** –

-

;

• **Setup and Solution** –

;

• **Results** –

2.

Project schematic → Engineering data (клік лівою кнопкою миші двічі Edit

:

•

-

;

•

-

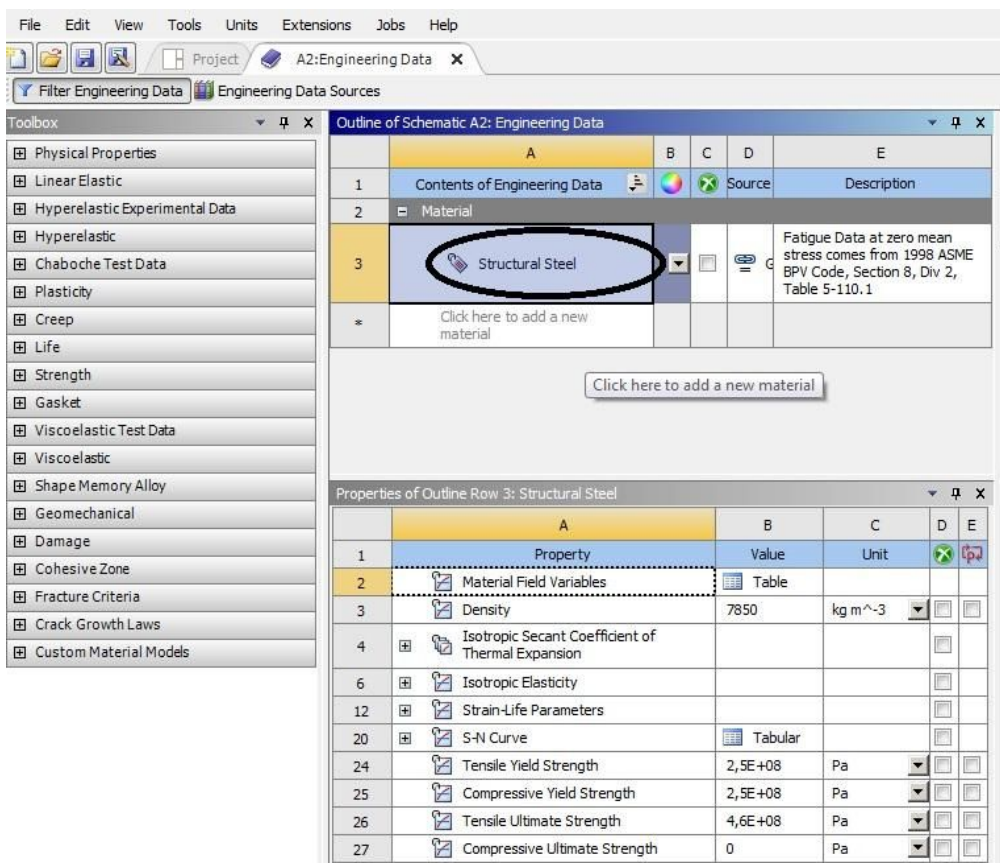
;

•

-

Structural Steel («

»).



. 3

Engineering Data

:

Engineering Data

,

:

Main menu View Reset Workspace

Main menu Return to Project

3.

3.1. **Design Modeler,**

Project schematic → Geometry (клік лівою кнопкою миші двічі), або клік правою кнопкою миші → New geometry

3.2.

Main Menu Units

Design Modeler

• **Main Menu** –

• **Tree Outline** –

• **Graphics** –

(Sketchs).

3.3.

3.3.1.

TreeOutline

YZPlane.

3.3.2.

Sketch1.

Main menu Newsketch

3.3.3.

Sketch1

YZPlane

Main menu → Treeoutline → Sketch1 () → Look at face 

3.3.4.

Main menu Treeoutline Sketching Draw Circle

3.3.5.

Sketching Dimensions General

Details

View.

3.3.6.

Extrude (.4)

Details View

Extrude

Base Object –

Operation –

Add Material,

Cut Material –

Imprint Faces –

Add Frozen

Direction Vector –

None Normal,

Direction –

: Normal –

, Reversed –

, Both Symmetri –

, Both Asymmetric –

Extent –

Fixed –

Through All –

, o Next –

Face –

Surface –

Details View	
Details of Extrude1	
Extrude	Extrude1
Geometry	Sketch1
Operation	Add Material
Direction Vector	None (Normal)
Direction	Normal
Extent Type	Fixed
<input type="checkbox"/> FD1, Depth (>0)	50 mm
As Thin/Surface?	No
Merge Topology?	Yes
Geometry Selection: 1	
Sketch	Sketch1

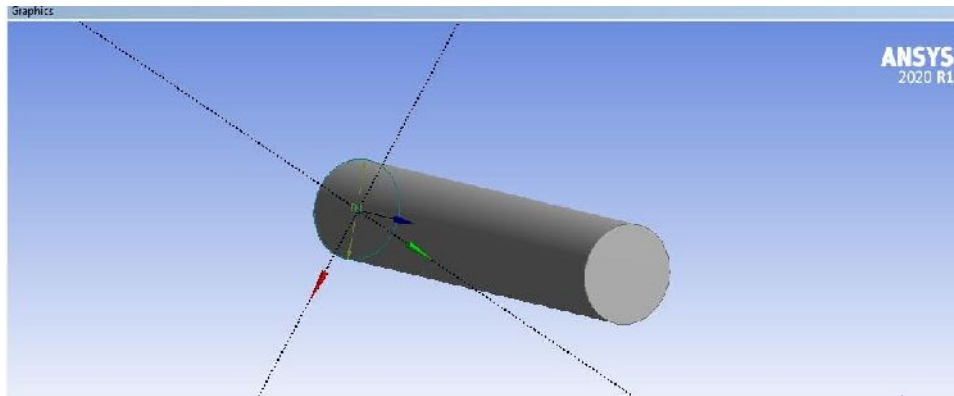
Operation	Add Material
Direction Vector	Add Frozen
Direction	Add Material

Direction	Normal
Extent Type	Normal
<input type="checkbox"/> FD1, Depth (>0)	Reversed
As Thin/Surface?	Both - Symmetric
	Both - Asymmetric

. 4. *Extrude*

3.3.7.

(.5).



.5.

3.3.8. Generate –

3.3.9.

Main menu Rotate/Pan/Zoom/Undo

3.3.10.

Sketch2.

Main menu Newsketch

3.3.11.

(Project Schematic).

Desing Modeler

4. C

4.1.

Mechanical.

Project schematic → *Model* (лівою кнопкою миші двічі,
Edit

Menu),

(Geometry).

(Outline),

(Details of ...)

(Main

4.2.

Outline Mesh Generate mesh

4.3.

Outline → Static Structural

, : **Inertia** (« »),
Loads (« »), **Supports** (« »).

4.4.

:

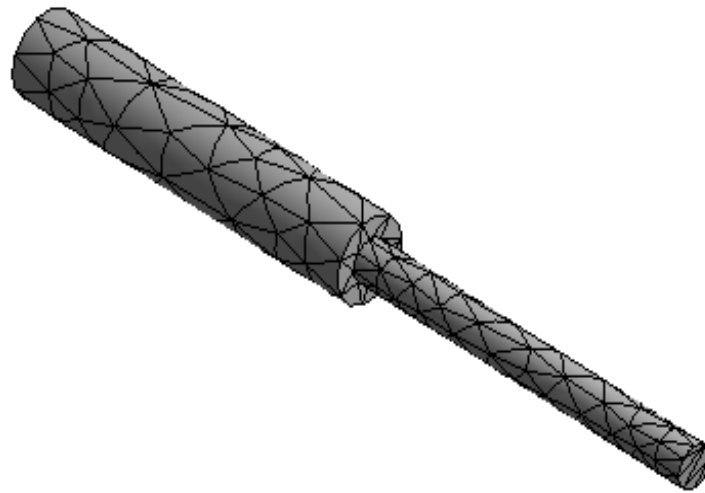
Main menu Supports Fixed supports

4.5.

-

:

Main menu Loads Force



. 6.

4.6.

:

Outline *Solutio*

, : **Deformation** (« -
»), **Stress** (« ») .

Equivalent (von-Mises) (« »),
Deformation Total (« »).

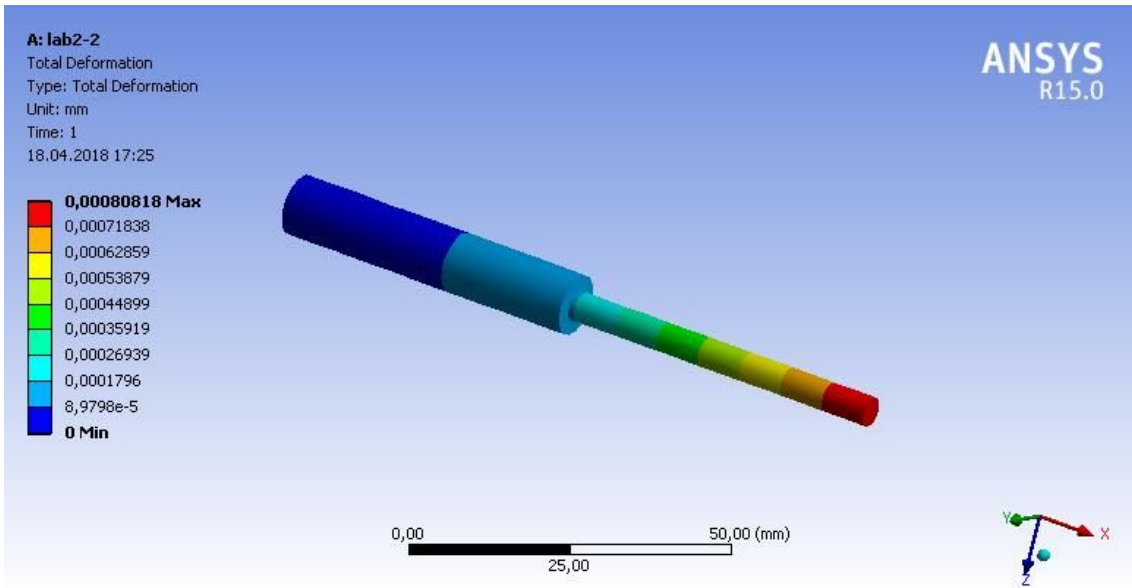
Outline *Solutio* (A6) Insert Stress Equivalent (von-Mises)

Outline *Solutio* (A6) Insert *Deformatio* Total

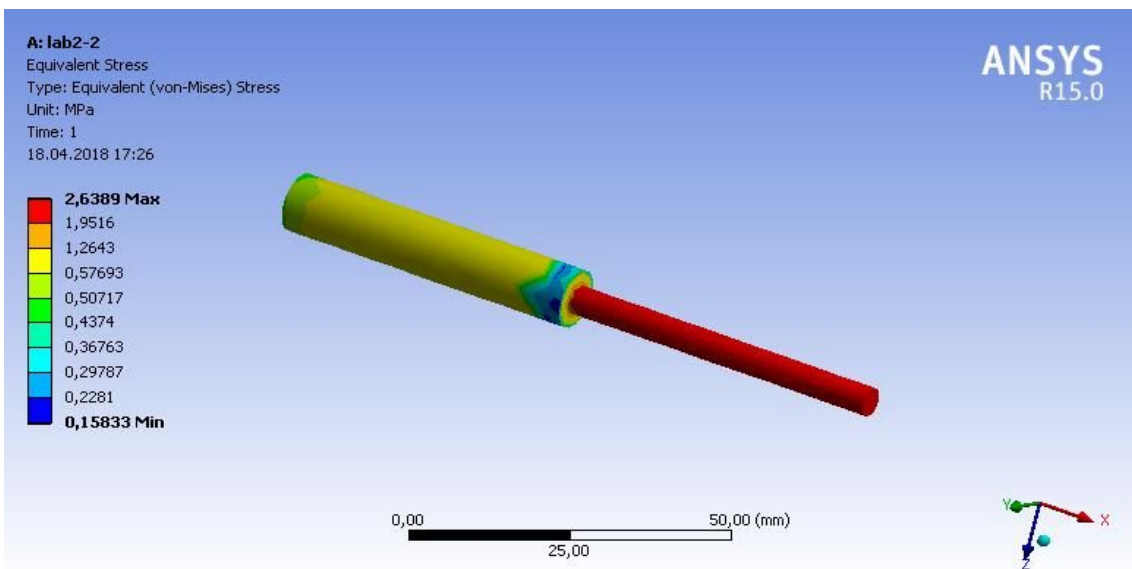
4.7. **Solve** (« »).

4.8. (. 7 – 8).

4.9. Save –



. 7.



. 8.

1. ?
2. ?
3. *Ansys Workbench?*
4. , , , ? , -
- 5.

1. ANSYS. Ansys. — 26 .
2. . . . , . . . , — . — : . . . - , 2010. — 271 .
3. . . ANSYS — : , 2002. — 224 : .
4. . . ANSYS: . : , 2005. — 640 .:

()

:

,

,

,

60×84 1/16.

Times New Roman.

100

.0,7

61002, . , . ,44