

# DEFINITION OF CURVATURE OF THE GENERAL VIEW WORM SURFACE

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**The Abstract.** Expressions, defining basic criteria of a surface curvature of a general view worm thread, and radiuses of curvature in plane sections is obtained.

**Keywords:** worm, surface, coordinates, cross-section, curvature, differential.

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$$\sigma_r(r) = \frac{E\alpha(T_2 - T_1)}{2(1 - \mu)\ln\left(\frac{R_2}{R_1}\right)} \cdot \left( \ln\left(\frac{R_2}{r}\right) + \frac{R_1^2}{R_2^2 - R_1^2} \left(1 - \frac{R_2^2}{r^2}\right) \ln\left(\frac{R_2}{R_1}\right) \right), \quad (1)$$

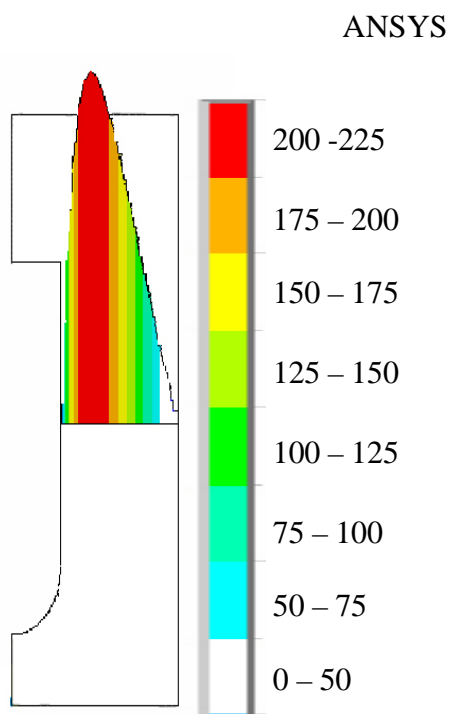
$$\sigma_\theta(r) = \frac{E\alpha(T_2 - T_1)}{2(1 - \mu)\ln\left(\frac{R_2}{R_1}\right)} \cdot \left( 1 - \ln\left(\frac{R_2}{r}\right) + \frac{R_1^2}{R_2^2 - R_1^2} \left(1 + \frac{R_2^2}{r^2}\right) \ln\left(\frac{R_2}{R_1}\right) \right), \quad (2)$$

$E$  - ,  $\mu$  - ,  $\alpha$  - ,  $T_1$  ,  $R_1$  ,  $R_2$  - ,  $T_2$  -

$$673 \quad , \quad \dots \quad (1) \quad (2)$$

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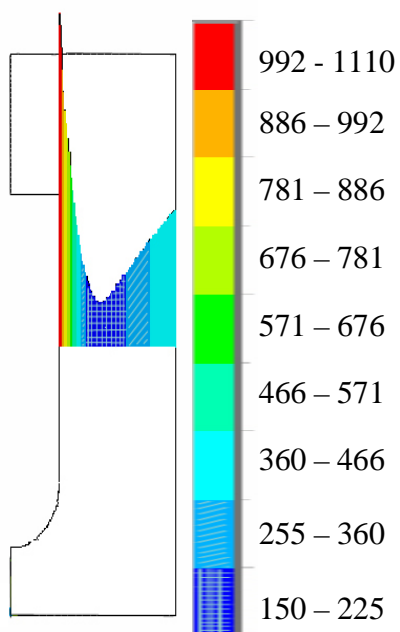
$$\sigma_{eq} = (1/2((\sigma_1 - \sigma_2)^2 + (\sigma_1 - \sigma_3)^2 + (\sigma_3 - \sigma_2)^2))^{1/2} \leq [\sigma],$$

$\sigma_{eq}$  -

,  $\sigma_1, \sigma_2, \sigma_3$

2

(1),



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$\sigma_r$  ( 1)

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$r$ .

,  $[\sigma] = 1520$

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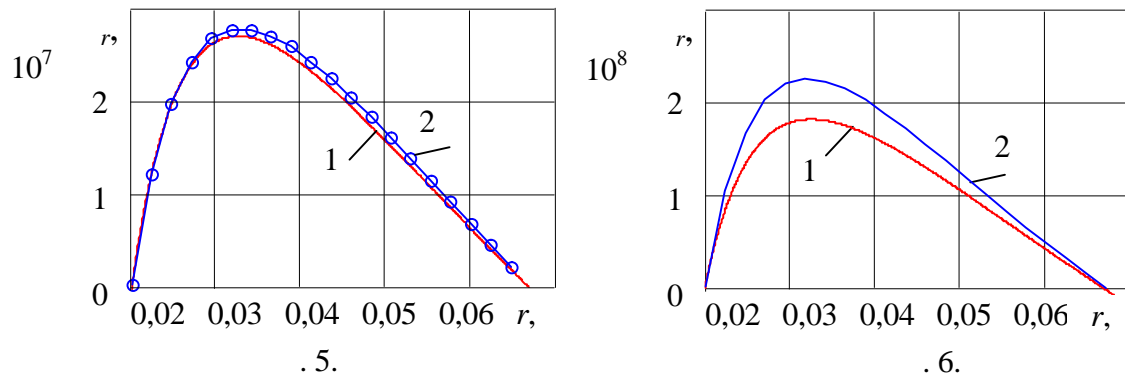
- 350 ),

$\sigma_r$

1

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6  $\sigma_r$  1 - ANSYS



$\sigma_{r1} = 1,81 \cdot 10^8$

$\sigma_{r1} = 2,25 \cdot 10^8$

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