

645

$$A(r) = \pi r^2, \quad r = 3000 \pm 10 \text{ [mm]}$$

$$\begin{aligned} \Delta_{\max} A &\leq A'(3000) \cdot 10 & (A'(r) = 2\pi r) \\ &= 2\pi \cdot 3000 \cdot 10 \\ &= 60000 \pi \text{ [mm}^2\text{]} \end{aligned}$$

$$\frac{\Delta_{\max} A}{A(3000)} = \frac{60000\pi}{\pi \cdot 9000000} \approx 0,0067 = \underline{\underline{0,67\%}}$$

$$\Delta_{\max} A \leq A'(r_0) \Delta_{\max} r + \left(\frac{1}{2} \max_{\xi \in [r_0 - \Delta_{\max} r, r_0 + \Delta_{\max} r]} |A''(\xi)| \right) (\Delta_{\max} r)^2$$

$$(\Delta_{\max} r \ll 1 \Rightarrow (\Delta_{\max} r)^2 \text{ sehr klein})$$

$$A''(r) = 2\pi \Rightarrow \frac{1}{2} \max_{\xi \in \dots} |A''(\xi)| = \frac{1}{2} \cdot 2\pi = \pi$$

2. Summand: $100\pi \approx 314$

1. Summand: $2\pi \cdot 3000 \cdot 10 = 60000\pi \approx 180000$