APENDIX A Charts generated by ALGOR® for shafts with stress concentrators in series

Stress concentration factor

\[ y = 0.0159x^2 + 0.0532x + 1.6388 \]

Distance between notches

\[ R_1 = R_2 = R_3 = 1\text{mm} \]

\[ L/r = 1.25 \quad \text{Polynomial}(L/r = 1.25) \]
Stress concentration for Central Notch

\[ y = 0.0045x^2 + 0.0891x + 1.683 \]

Distance Between Notches (L/r)

- \( R_1 = 1 \text{ mm} \)
- \( R_2 = R_3 = 2 \text{ mm} \)
Stress Concentration Factor For Central Notch

\[ y = 0.0047x^2 + 0.0802x + 1.7218 \]

L/r = 1.25

Polynomic (L/r=1.25)

R1 = 1 mm
R2 = R3 = 3 mm
Stress Concentration Factor for Central Notch

\[ y = 0.0139x^2 + 0.0743x + 1.586 \]

For \( L/r = 1.25 \), the graph shows the polynomial expression:

\[ R1=R2=R3=R4=R5=1\text{mm} \]

The graph plots the stress concentration factor \( K_t \) against the parameter \( L/r \). The blue line represents \( L/r = 1.25 \), while the black line represents a polynomial fit with \( L/r = 1.25 \).
Stress Concentration Factor for Central Notch

\[ y = 0.5168x^2 - 1.119x + 1.9403 \]

R1=1mm
R2=R3=1m
Stress Concentration Factor for Central Notch

\[ y = 0.1977x^2 - 0.7088x + 2.0277 \]

\( L/r = 1.25 \)

Polynomic (L/r= 1.25)

R1=1mm

R2=R3=2mm

\[ L/r = 1.25 \quad \text{Polynomic (L/r= 1.25)} \]
Stress Concentration Factor for Central Notch

\[ y = 0.5553x^2 - 1.2882x + 1.9051 \]

R1 = 1 mm
R2 = R3 = 3 mm

L/r = 1.25 — Polynomic (L/r = 1.25)