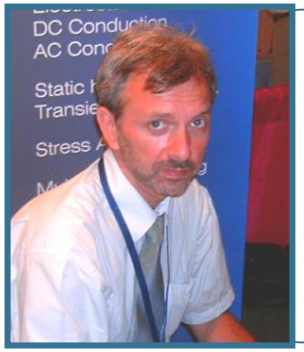
High voltage engineering simulations with QuickField

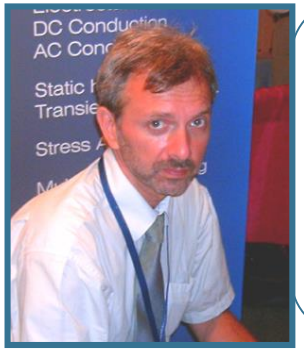


Vladimir Podnos,
Director of Marketing and Support,
Tera Analysis Ltd.

Alexander Lyubimtsev
Support Engineer
Tera Analysis Ltd.

High voltage engineering simulations with QuickField.

QuickField Overview.

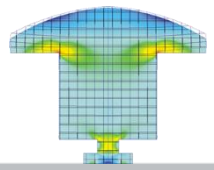
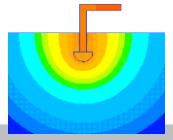
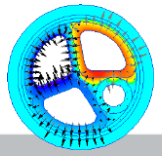
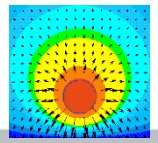
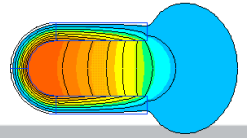
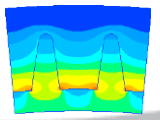
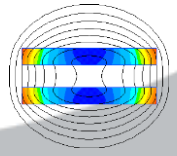
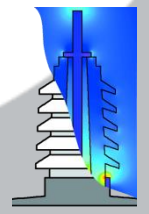


Vladimir Podnos,
Director of Marketing and Support,
Tera Analysis Ltd.

High voltage engineering

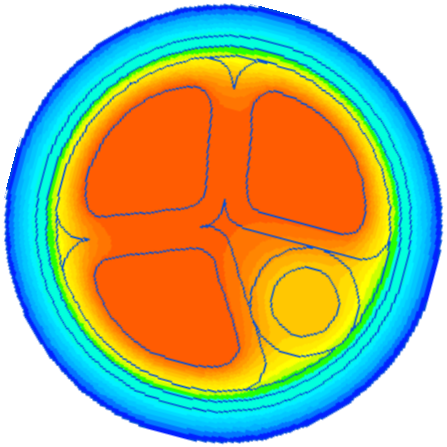
QuickField Analysis Options

Magnetic analysis suite	
Magnetic Problems	Magnetostatics
	AC Magnetics
	Transient Magnetic
Electric analysis suite	
Electric Problems	Electrostatics (2D,3D) and DC Conduction (2D,3D)
	AC Conduction
	Transient Electric field
Thermostructural analysis suite	
Thermal and mechanical problems	Steady-State Heat transfer (2D,3D)
	Transient Heat transfer
	Stress analysis

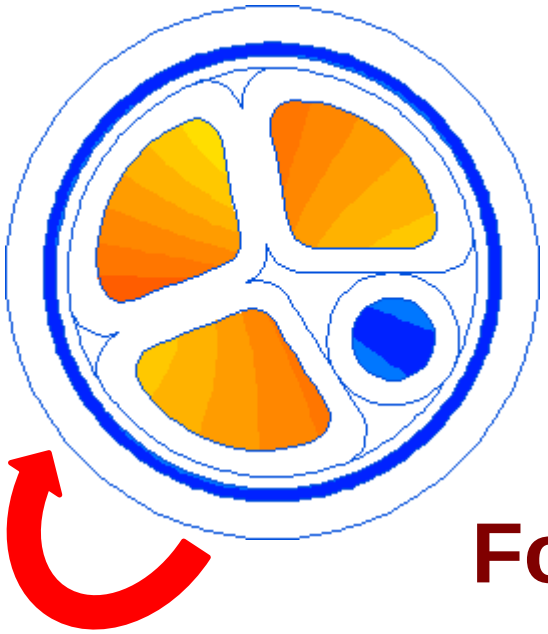









MultiPhysics

Temperature Field



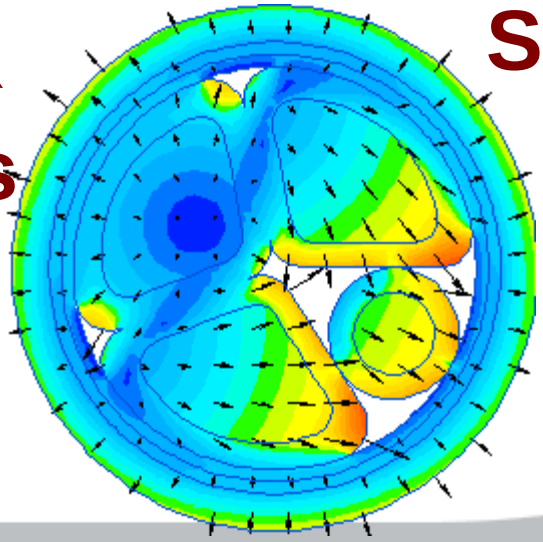
Electromagnetic fields



Losses

Thermal Stresses

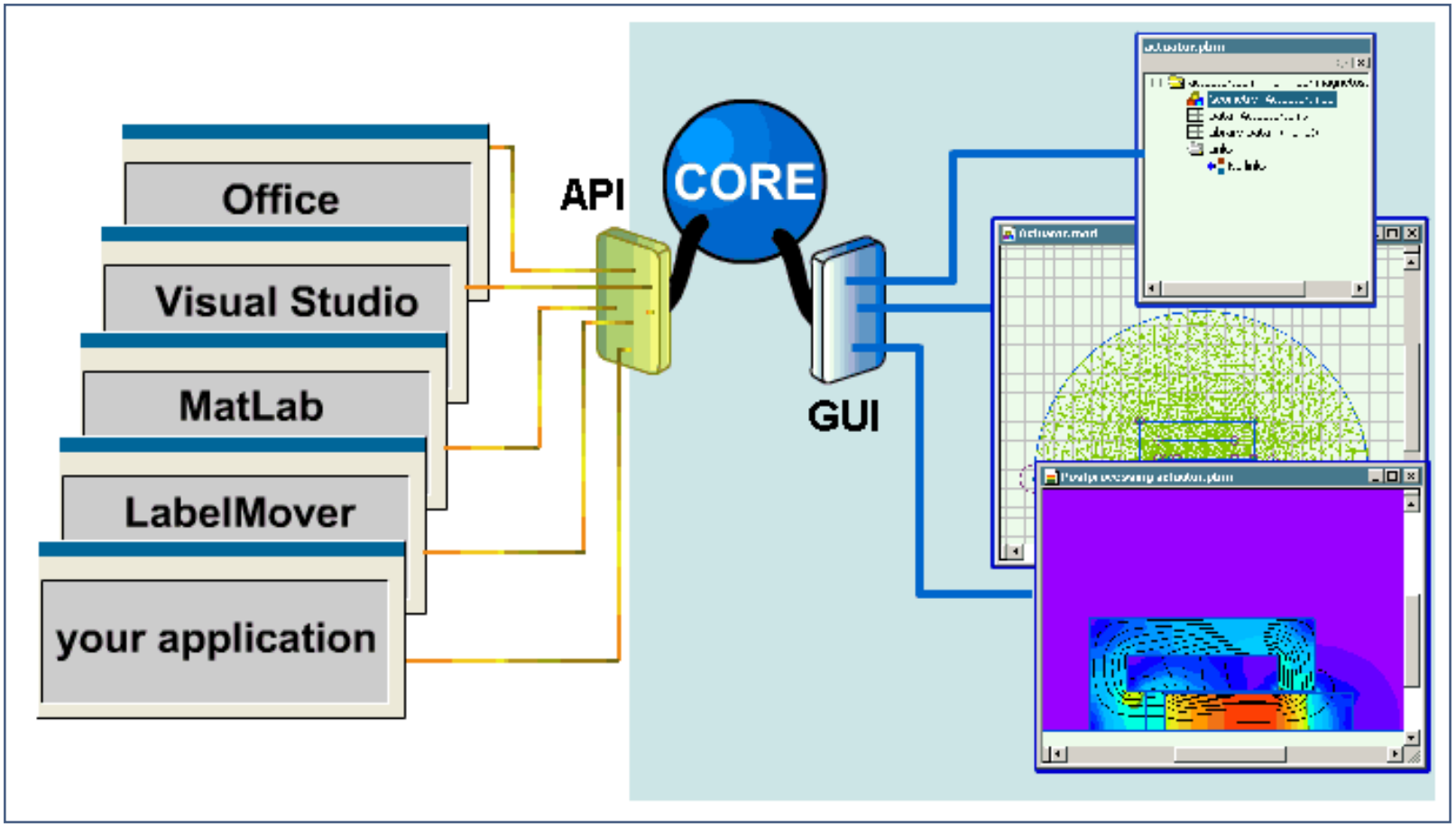
Forces



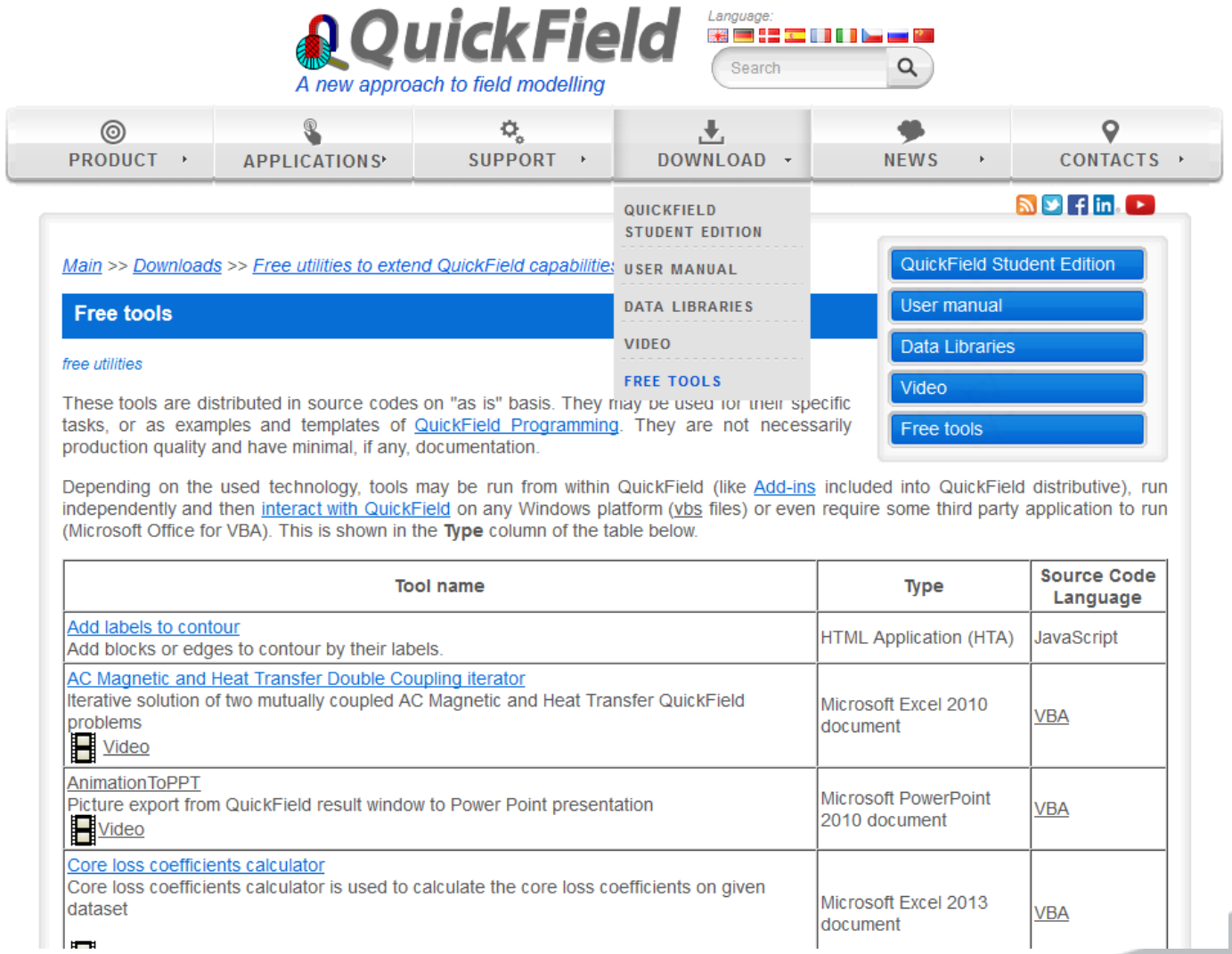
Magnetic state import

Stresses & Deformations

Open object interface



Free ActiveField based tools



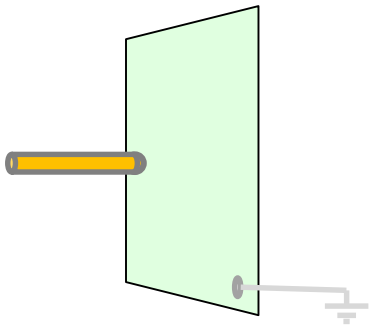
QuickField Difference

High voltage engineering simulations with QuickField.

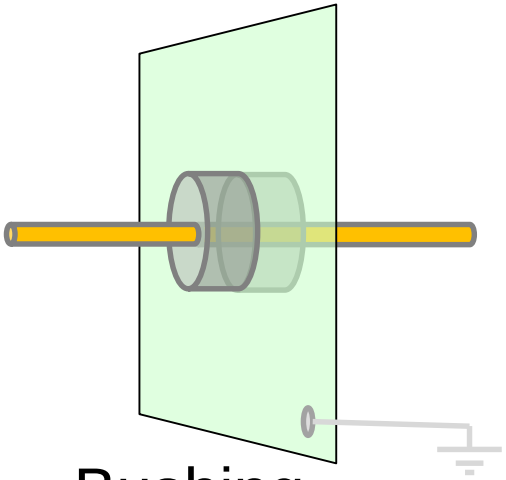
Live presentations.

Alexander Lyubimtsev
Support Engineer
Tera Analysis Ltd.

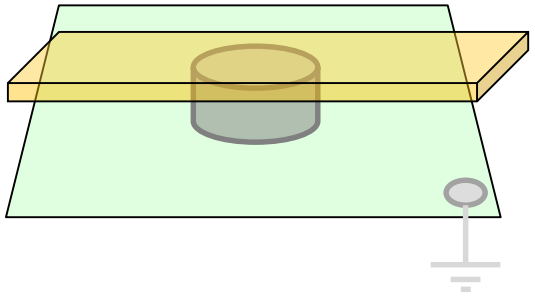
High voltage engineering simulation with QuickField



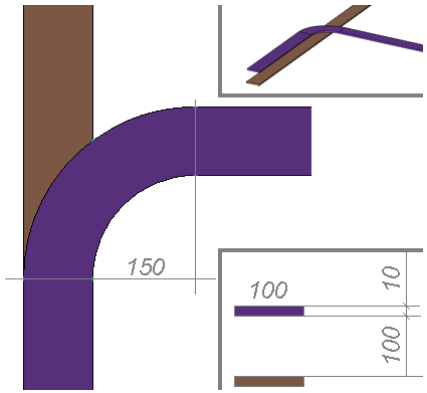
Needle
to plane



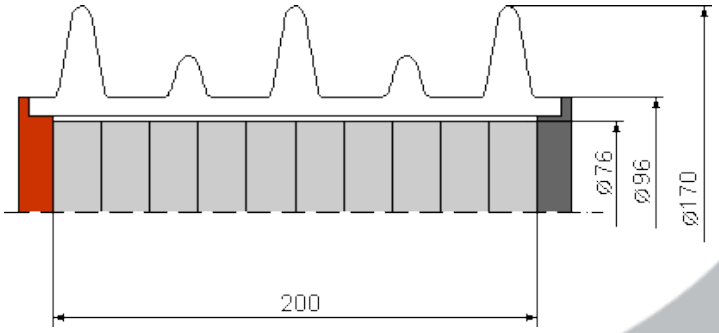
Bushing
optimization



Supporting
insulator

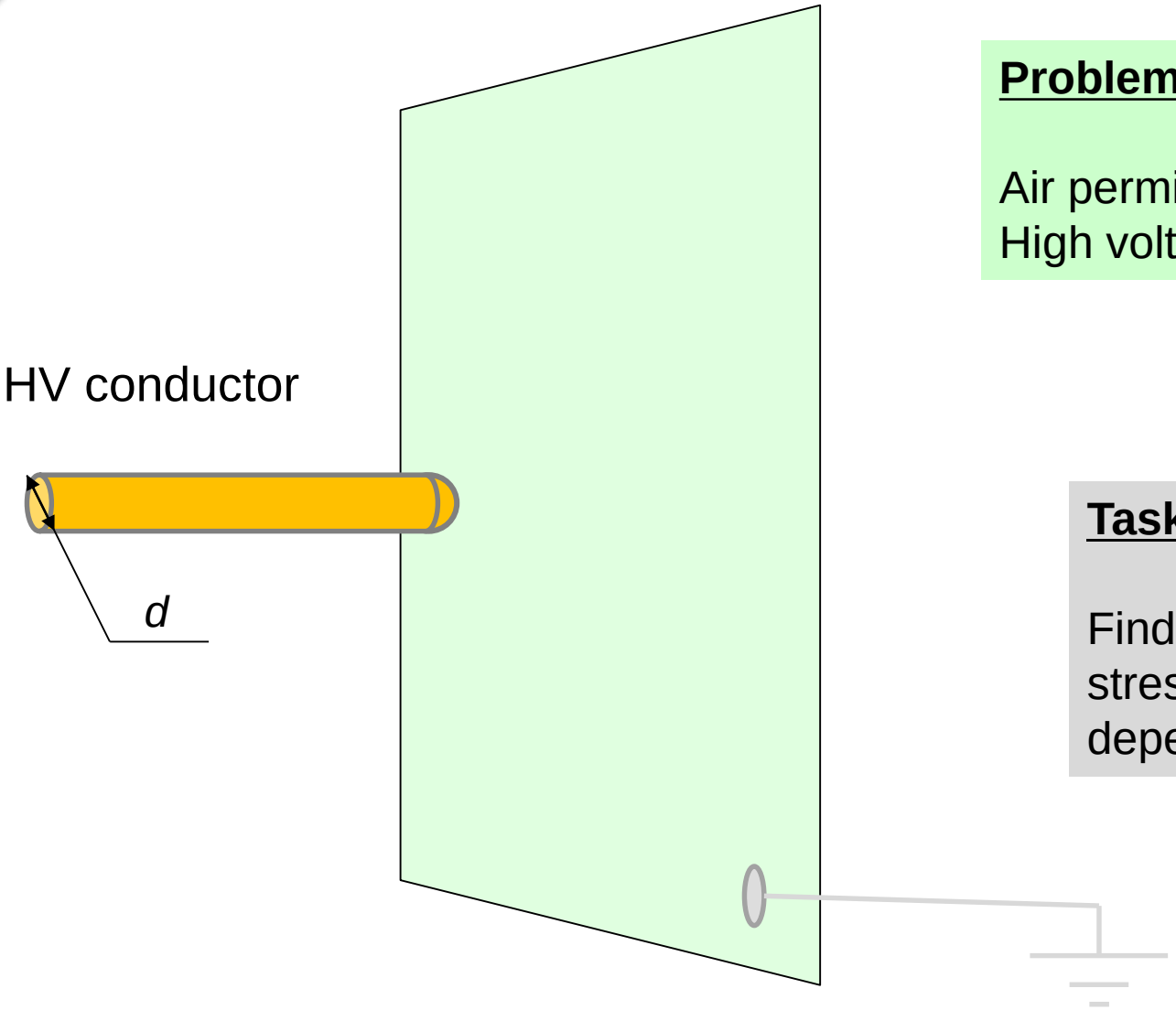


Bus-bars



Solid-state arrester

Needle to plane



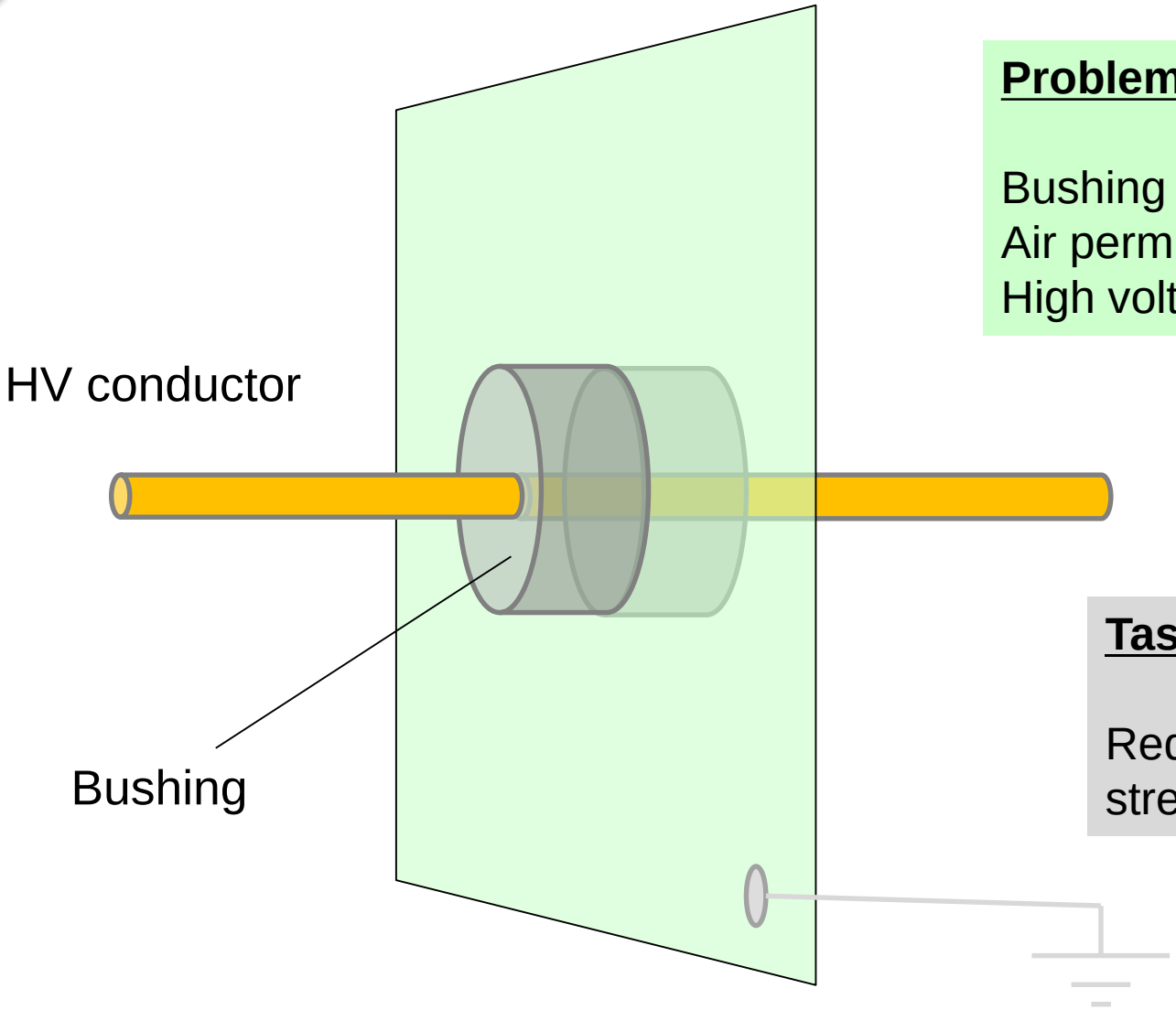
Problem specification:

Air permittivity: $\varepsilon = 1$
High voltage 10 kV

Task:

Find maximal electric field stress vs. needle diameter dependency

Bushing optimization



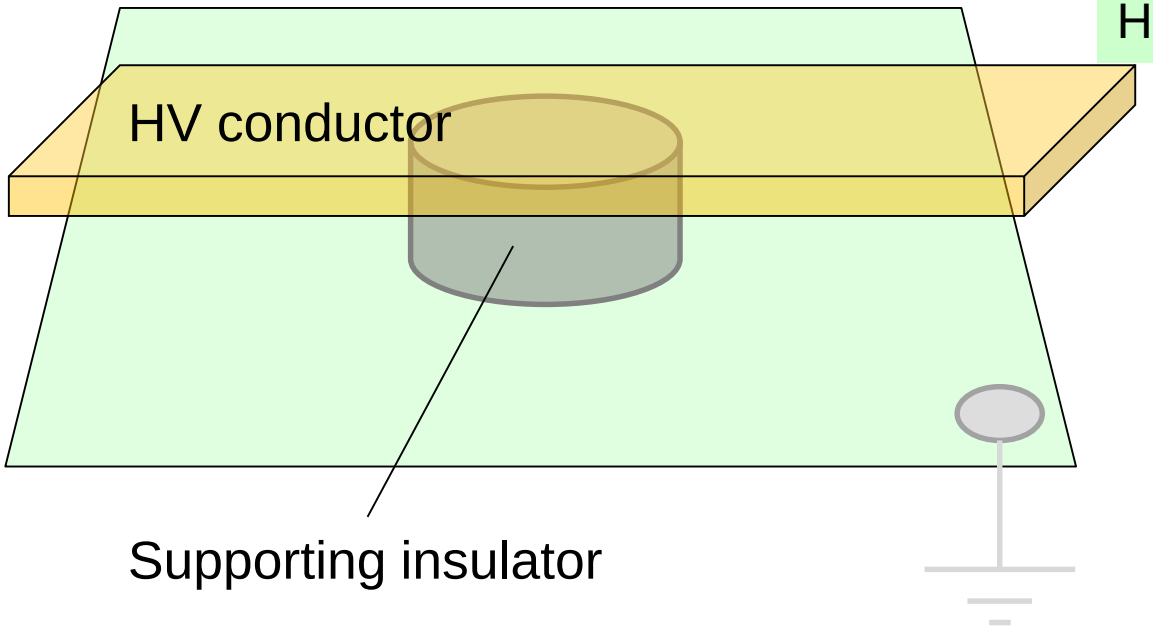
Problem specification:

Bushing permittivity: $\varepsilon = 2.4$
Air permittivity: $\varepsilon = 1$
High voltage 10 kV

Task:

Reduce electric field stress in insulation

Supporting insulator 3D



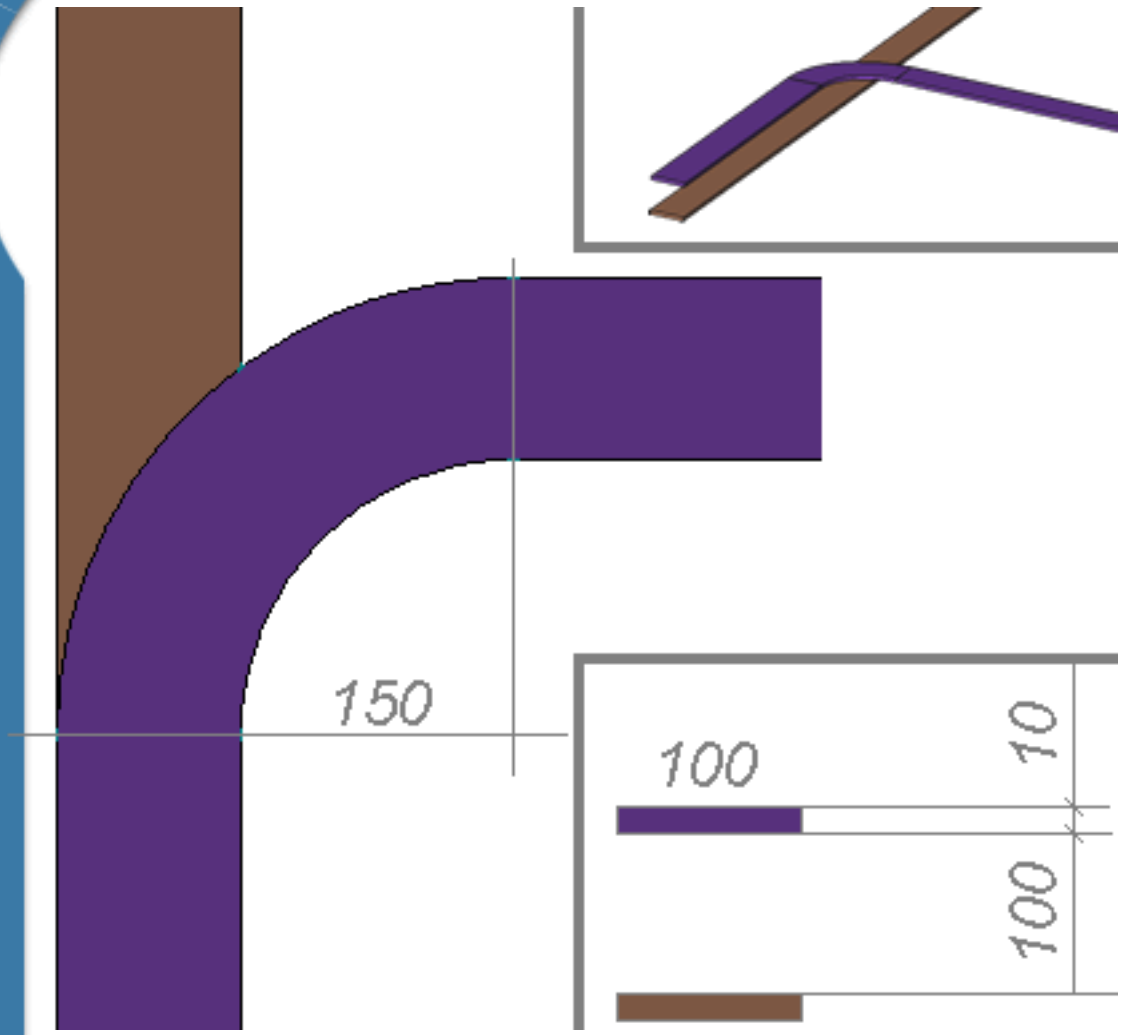
Problem specification:

Bushing permittivity: $\varepsilon = 2.4$
Air permittivity: $\varepsilon = 1$
High voltage 10 kV

Task:

Reduce electric field stress in insulation

Bus bars 3D



Problem specification:

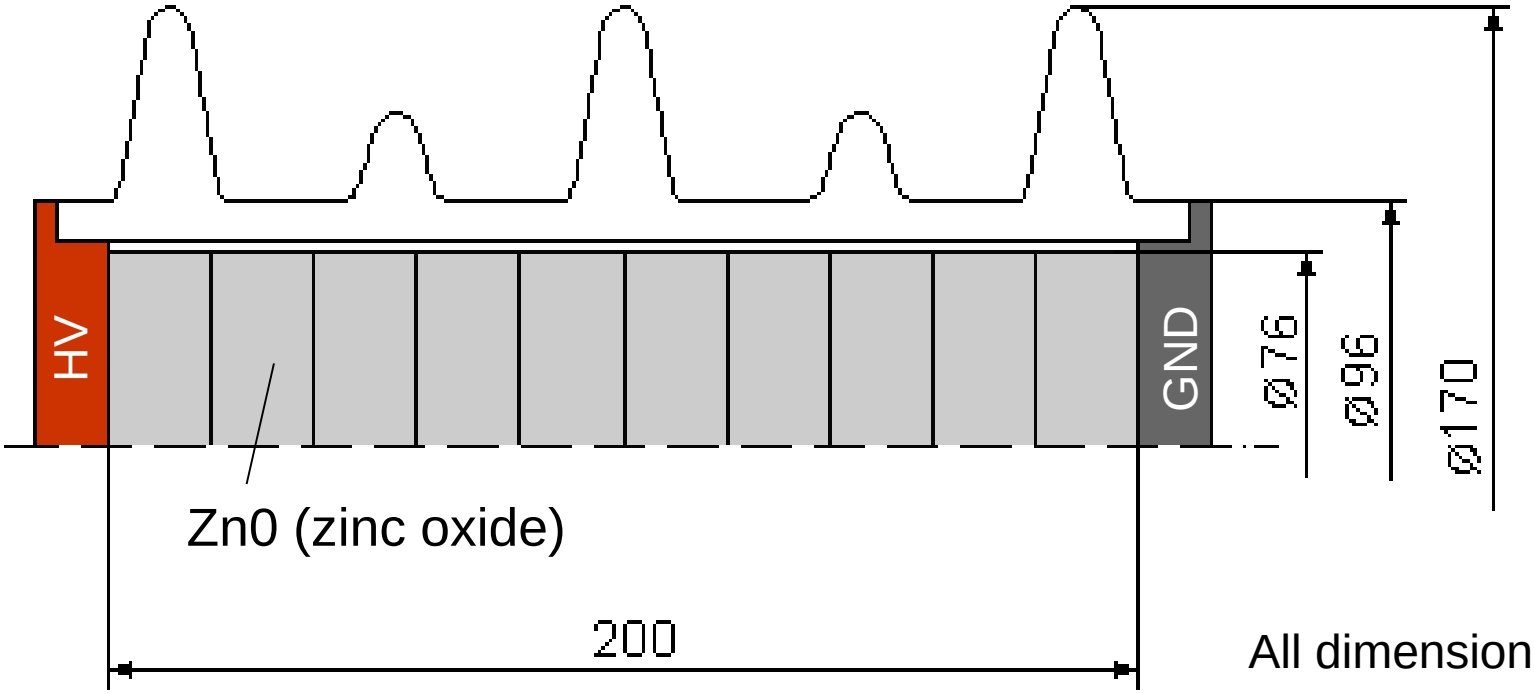
SF6 permittivity: $\varepsilon = 6$
Potential difference 10 kV

Task:

Calculate electric field stress distribution.

https://quickfield.com/advanced/bus-bars_90.htm

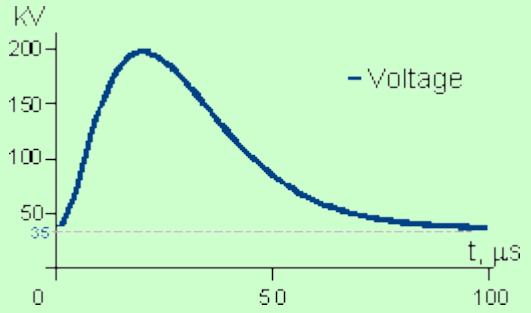
Solid state surge arrester



All dimensions are in mm.

Problem specification:

Rate voltage U = 35 kV
Zn0 permittivity ε = 60
Zn0 conductivity $\sigma = \sigma(E)$



Tasks:

Calculate surge pulse transient current

https://quickfield.com/advanced/telec2.htm