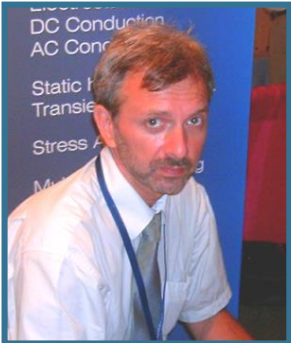




Free QuickField tools



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

QuickField core and expansions



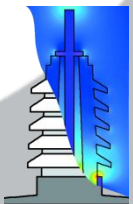
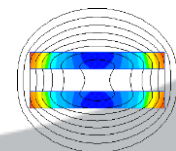
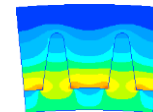
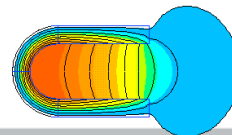
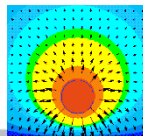
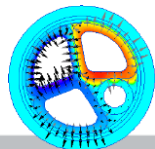
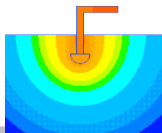
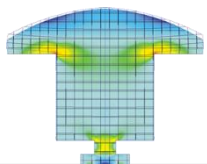
Alexander Lyubimtsev
Support Engineer, Tera Analysis Ltd.

Free QuickField Tools



QuickField Analysis Options

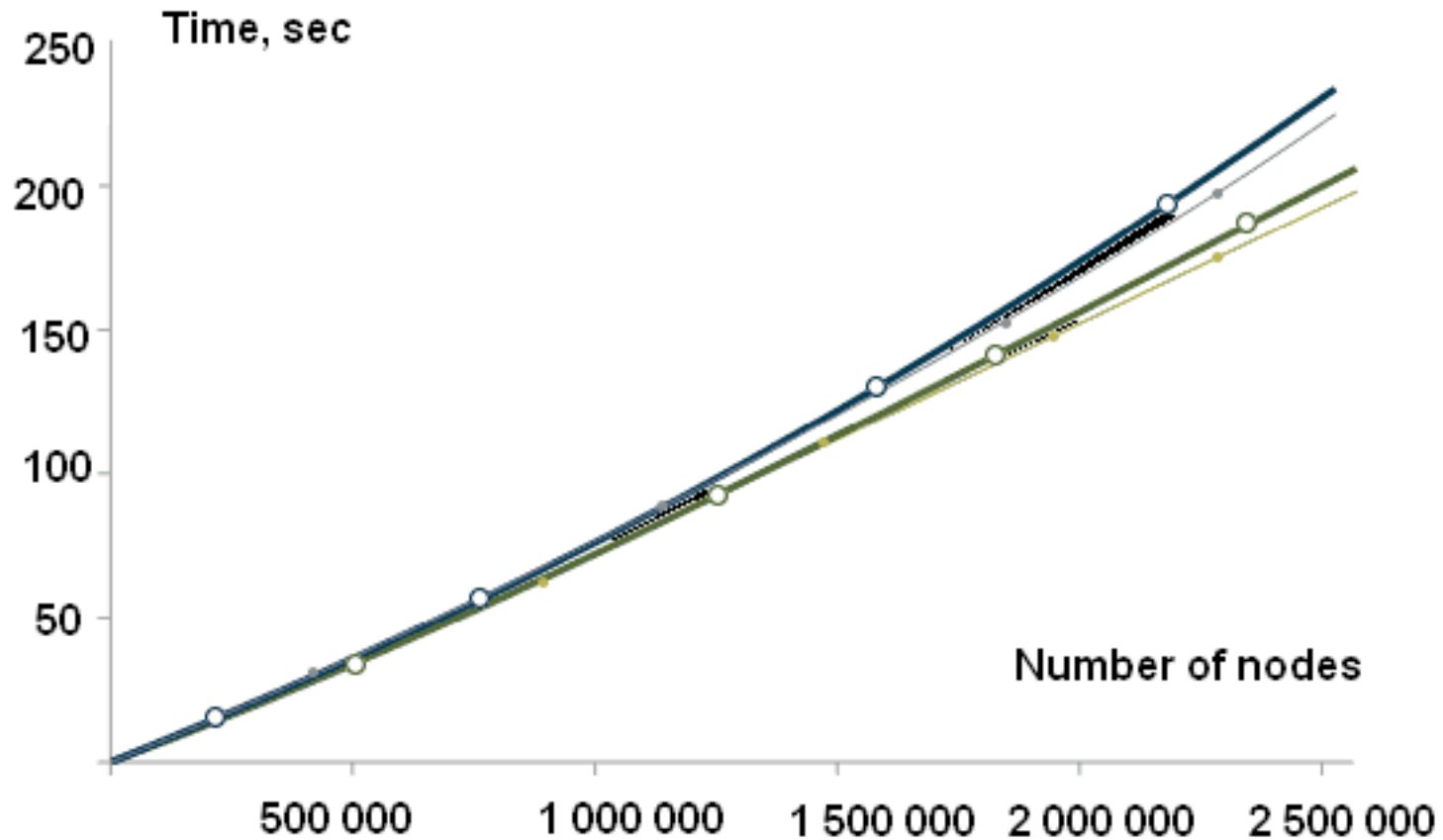
Magnetic analysis suite	
Magnetic Problems	Magnetostatics
	AC Magnetics
	Transient Magnetics
Electric analysis suite	
Electric Problems	Electrostatics and DC Conduction
	AC Conduction
	Transient Electric field
Thermostructural analysis suite	
Thermal and mechanical problems	Steady-State Heat transfer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





QuickField solvers

Solution time for various sizes of finite element mesh

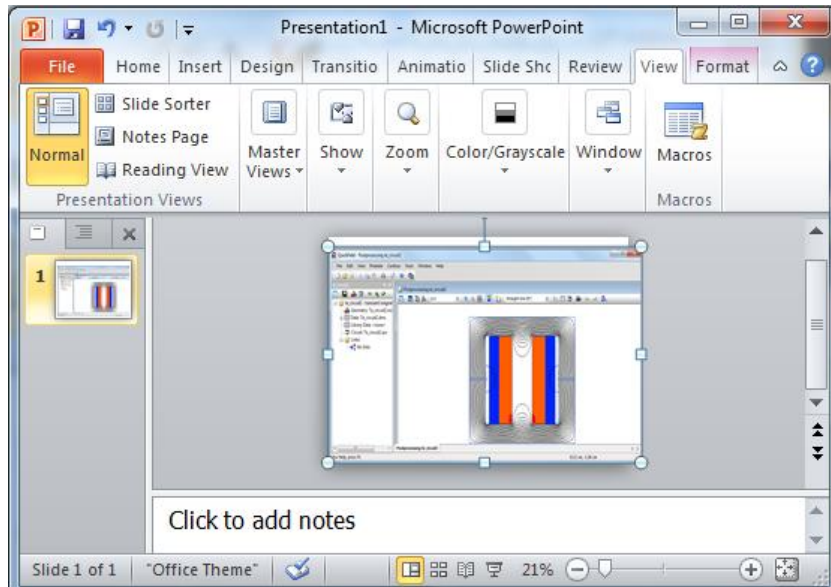
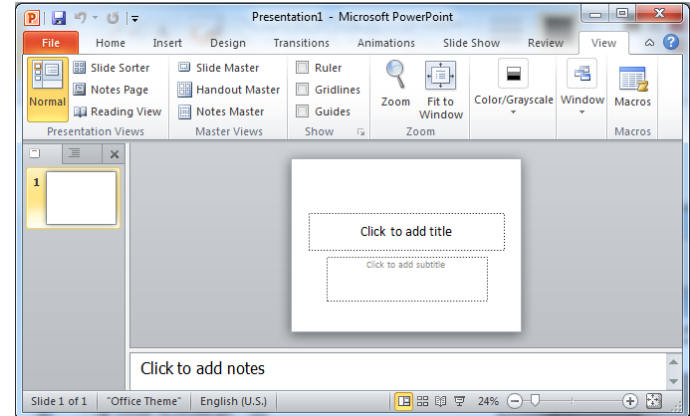
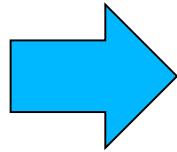
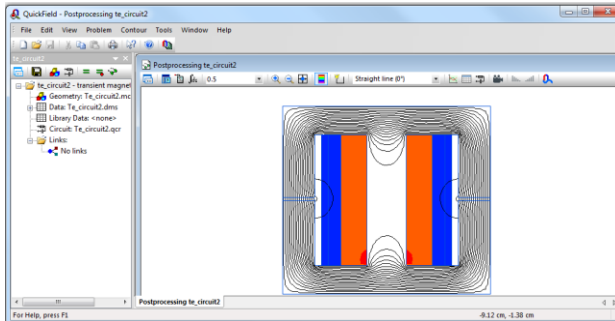




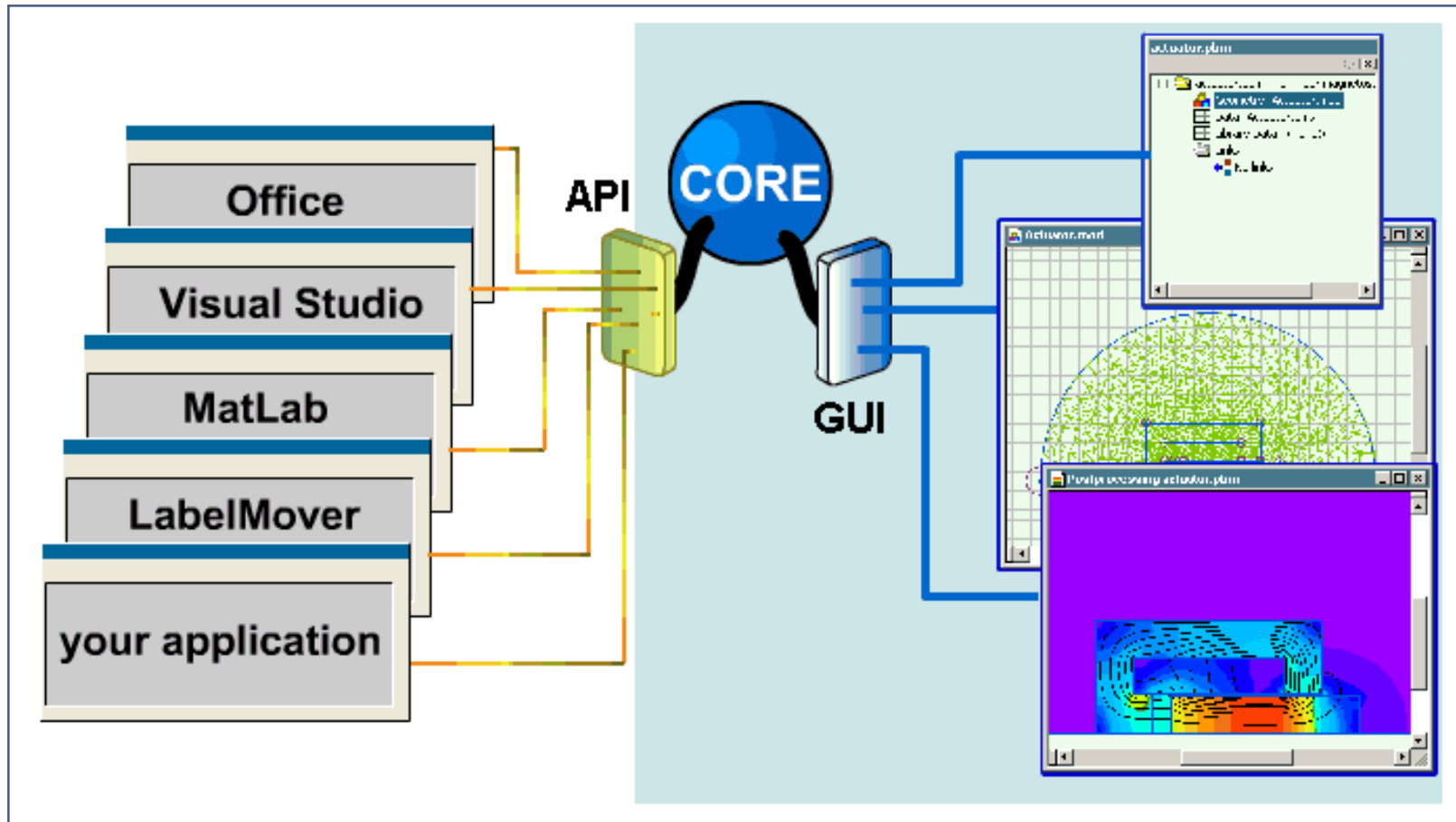
What if core features are not enough?



Missing feature example



Open object interface





ActiveField API object model

ActiveField™ help

[Main QuickField Site](#)

[Free Downloads](#)

[Contacts](#)

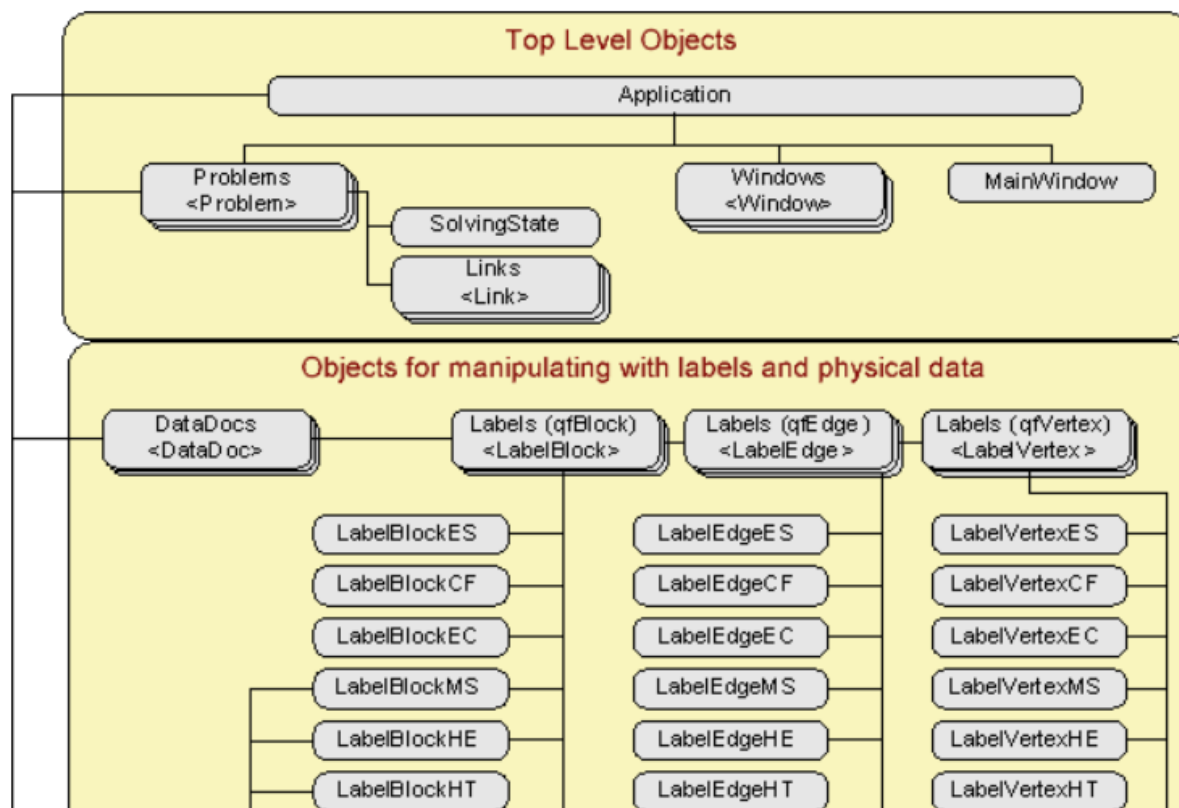
- ActiveField Technology
- Objects Overview
- Hierarchy Chart
- How to Start: Application Object
- How to work with Problems
- How to work with Model
- How to work with Data
- How to Analyze Results

Objects

Properties

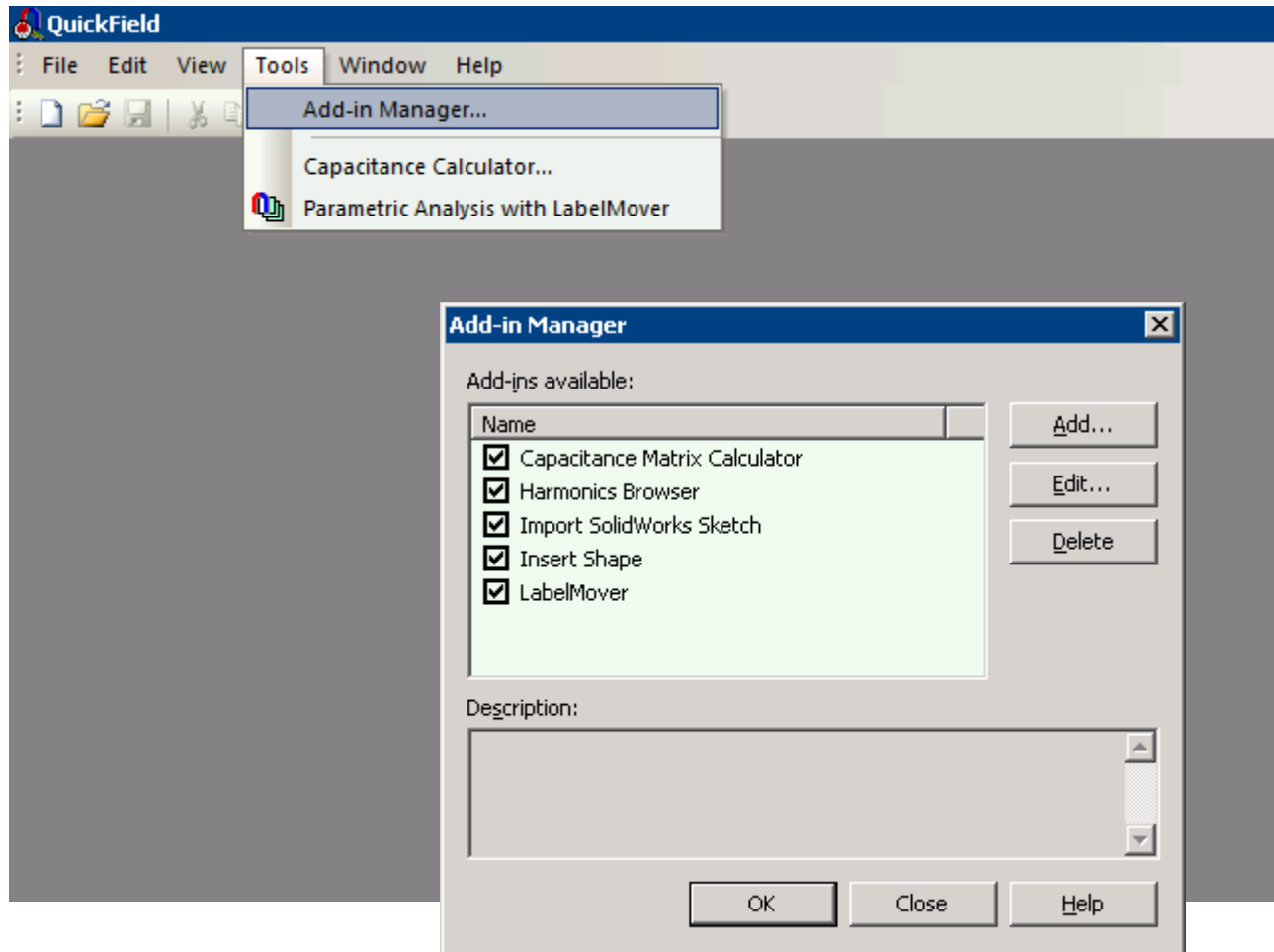
Methods

QuickField Object Model





QuickField add-ins





Free QuickField tools

1. Animation to PowerPoint.
2. Stress deformed shape to model.
3. Linear contour in cylindrical problem
4. Magnetic force between PM cylinders in 3D.



[Main](#) > [Downloads](#)

Free tools

These tools are distributed in source codes on "as is" basis. They may be used for their specific tasks, or as examples and templates of [QuickField Programming](#). They are not necessarily production quality and have minimal, if any, documentation.

Depending on the used technology, tools may be run from within QuickField (like [Add-ins](#) included into QuickField distributive), run independently and then [interact with QuickField](#) on any Windows platform ([vbs](#) files) or even require some third party application to run (Microsoft Office for VBA). This is shown in the **Type** column of the table below.

- [QuickField Student Edition](#)
- [User manual](#)
- [Data Libraries](#)
- [Video](#)
- [Free tools](#)

Tool name	Type	Source Code Language
AC Magnetic and Heat Transfer Double Coupling iterator Iterative solution of two mutually coupled AC Magnetic and Heat Transfer QuickField problems	Microsoft Excel 2010 document	VBA
AnimationToPPT Picture export from QuickField result window to Power Point presentation	Microsoft PowerPoint 2010 document	VBA
Cylinder PM force 3D This script calculates the force and torque acting on axially magnetized cylinders.	Microsoft Excel 2010 document	VBA
Linear contour in cylindrical problem Field results along the straight line contour arbitrary positioned in	Microsoft Excel 2010 document	VBA



Animation to PowerPoint

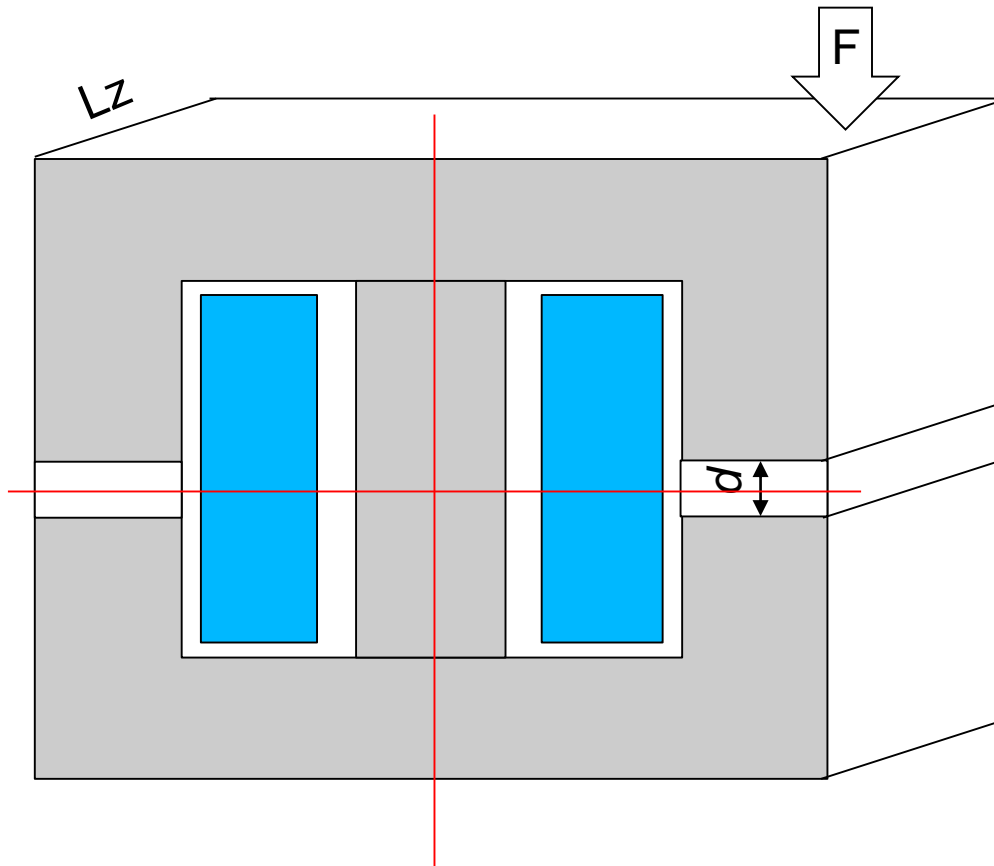
The screenshot displays the Microsoft PowerPoint 2010 interface. The title bar reads "animation_to_powerpoint.ppt [Compatibility Mode] - Microsoft PowerPoint". The ribbon is set to the "View" tab, with the "Slide Sorter" group selected. The main workspace shows three slides in a sequence:

- Slide 1:** Contains the text "Import Animation from QuickField" followed by a numbered list:
 - 1 Open QuickField problem (masses or non-linear)
 - 2 Open results and adjust field picture
 - 3 Run procedure (FS)
 - 4 Press RUN buttonBelow the list is a "RUN" button. At the bottom, it says "The procedure stops automatically after image acquisition is complete".
- Slide 2:** Shows a diagram of a curved structure with a grid of lines and several cyan-colored rectangular markers.
- Slide 3:** Shows the same diagram as Slide 2, but with the cyan markers now filled with a solid cyan color.

The slides are labeled "1" and "2" at the bottom, indicating the sequence of the animation.



Stress deformed shape



Problem specification:

Steel core Young's module
 $E = 200 \text{ Gpa}$,
Air gap $d = 1 \text{ mm}$
Force applied $F = 2 \text{ kN}$
Model depth $L_z = 80 \text{ mm}$

Calculate:

1. Core displacement.
2. Magnetic flux distribution

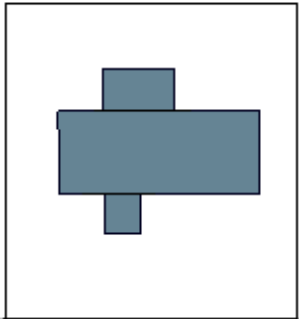
http://quickfield.com/stress_deform.htm

<http://quickfield.com/advanced/tecircuit2.htm>

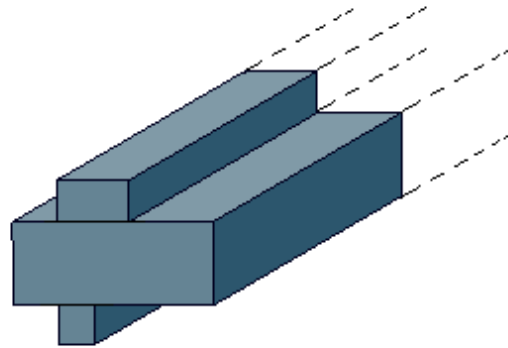


Linear contour in cylindrical problem

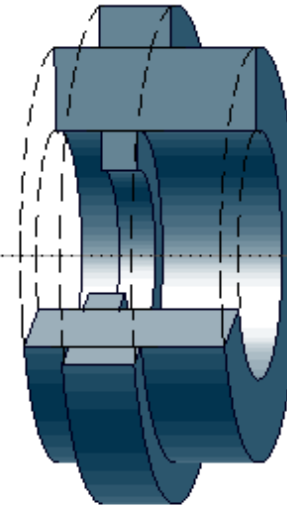
Model



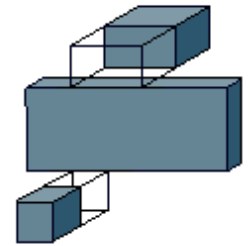
Real object



plane-parallel



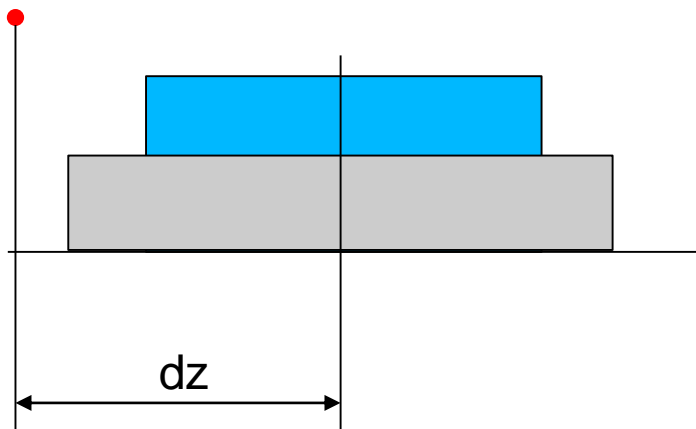
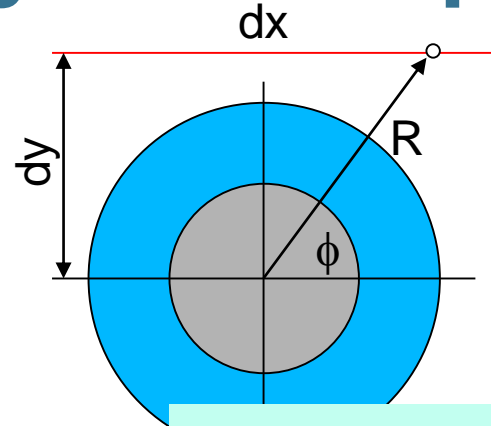
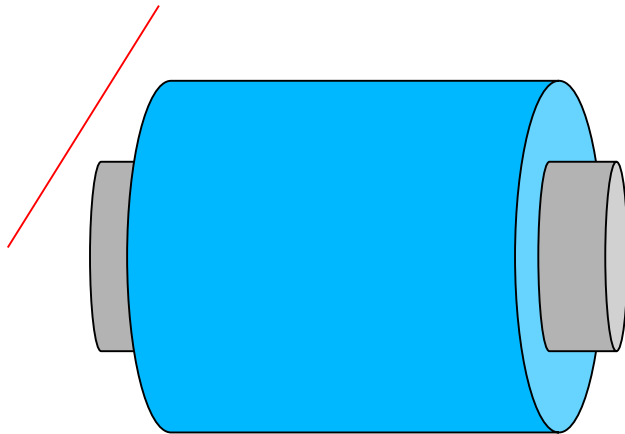
axisymmetric



3D extrusion



Linear contour in cylindrical problem



Problem specification:

Contour coordinates

$$dx = -0.05..0.05 \text{ m}$$

$$dy = 0.1 \text{ m}$$

$$dz = -0.2 \text{ m}$$

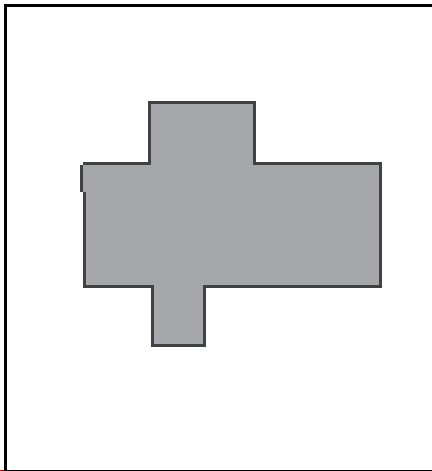
Calculate:

Magnetic flux density
distribution $\mathbf{B}(xyz)$

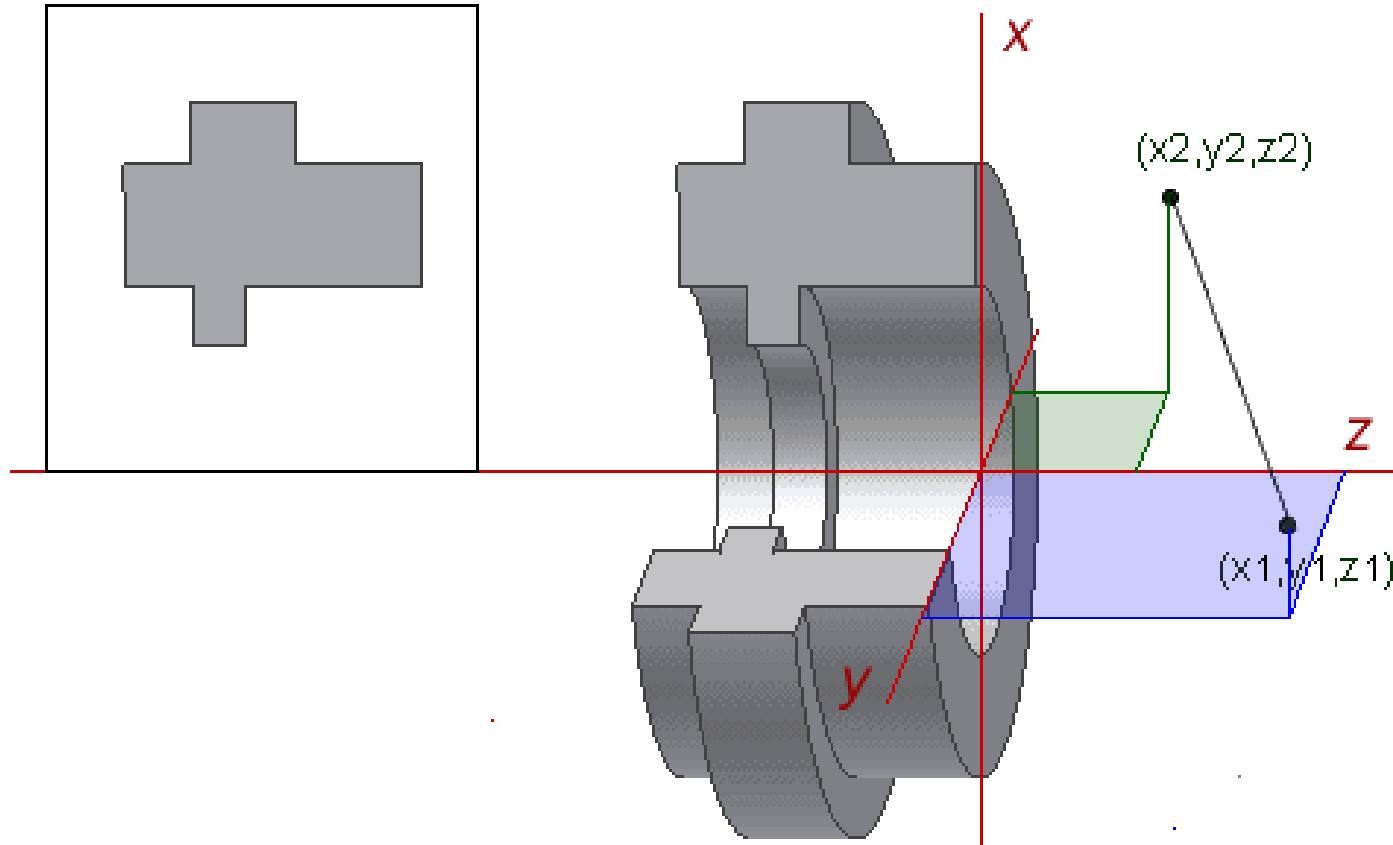


Linear contour in cylindrical problem

Model

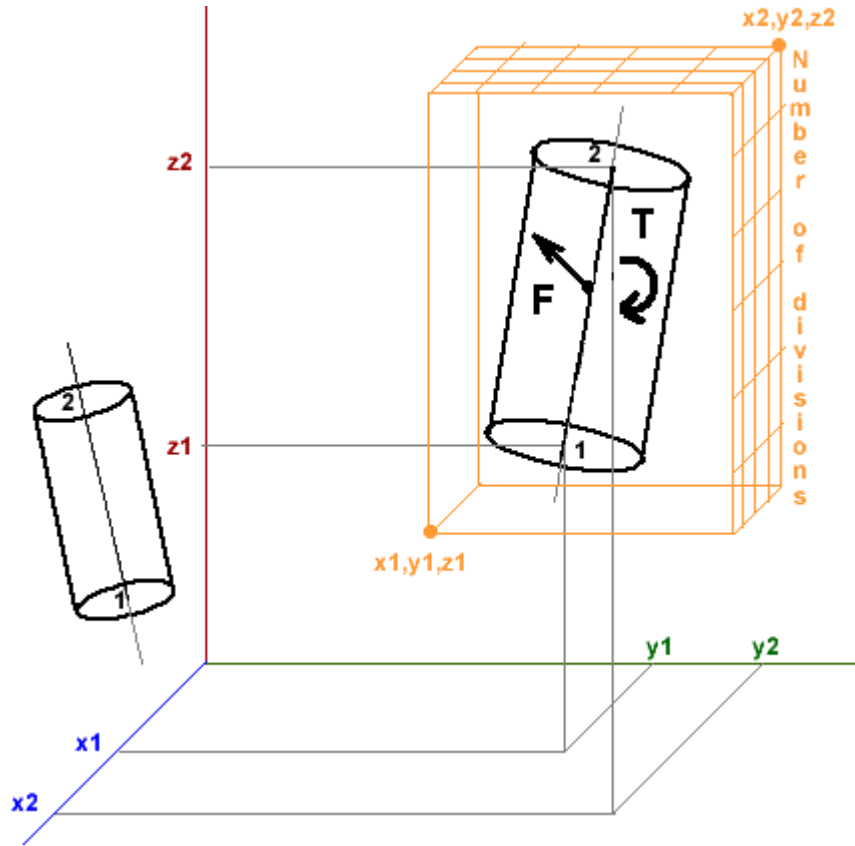


Real 3D object





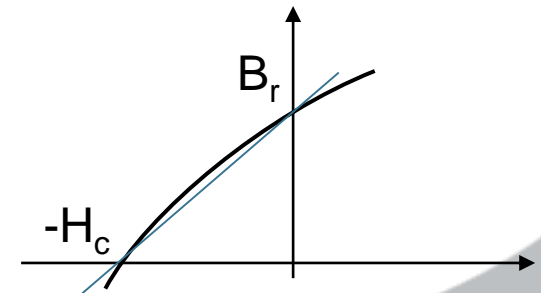
Magnetic force between cylindrical PM in 3D



Problem specification:

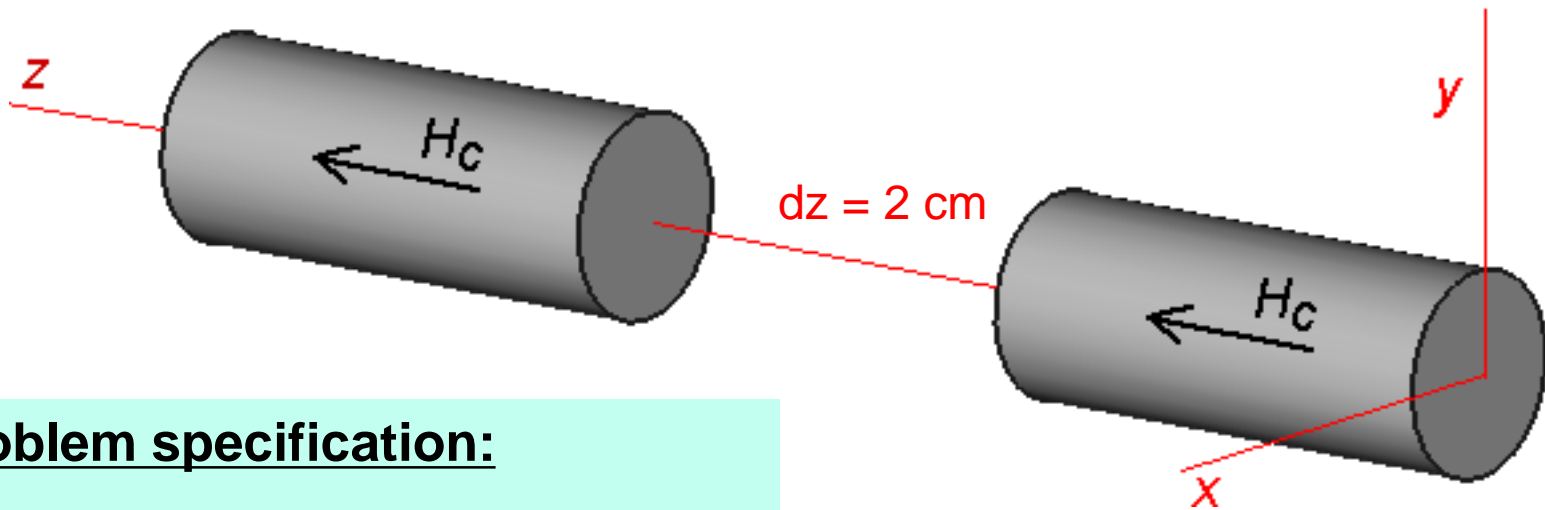
Coercive force $H_c = 1000$ kA/m
Remanence flux density $B_r = 1.3$ T

Magnetic permeability
 $\mu_r = B_r / H_c / \mu_0 = 1.05$





Magnetic force between cylindrical PM in 3D



Problem specification:

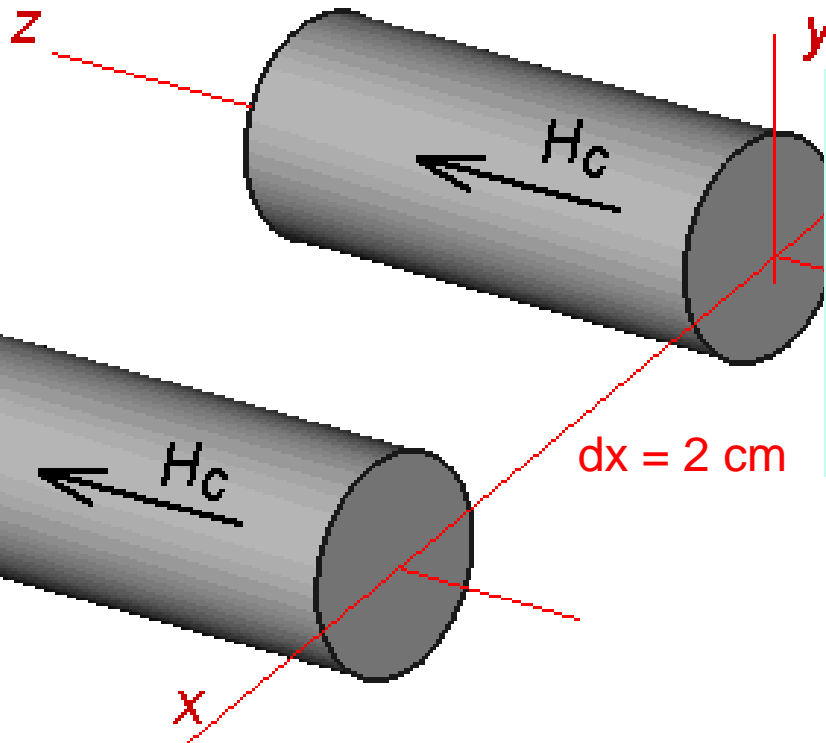
Coercive force $H_c = 1000$ kA/m
Remanence flux density $B_r = 1.3$ T
Cylinder diameter $D = 1$ cm,
Cylinder height $H = 4$ cm.

Calculate:

Magnetic force



Magnetic force between cylindrical PM in 3D



Problem specification:

Coercive force $H_c = 1000$ kA/m
Remanence flux density $B_r = 1.3$ T
Cylinder diameter $D = 1$ cm,
Cylinder height $H = 4$ cm.

Calculate:

Magnetic force