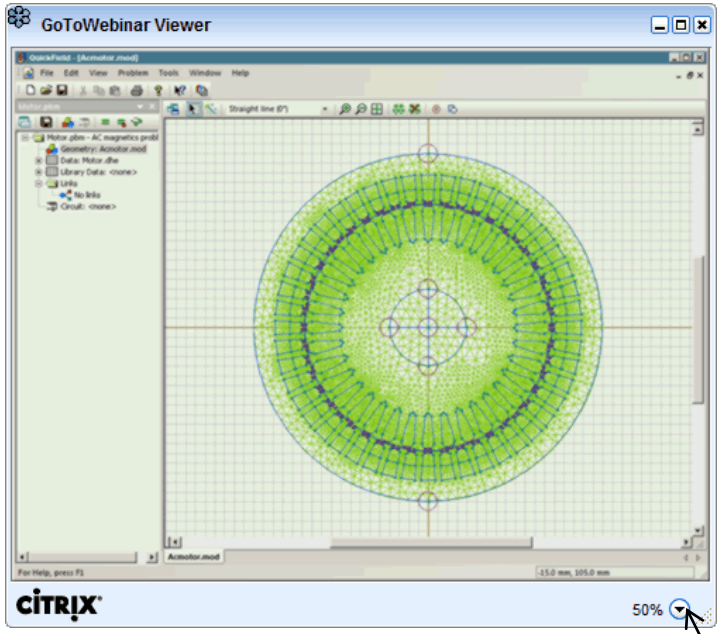
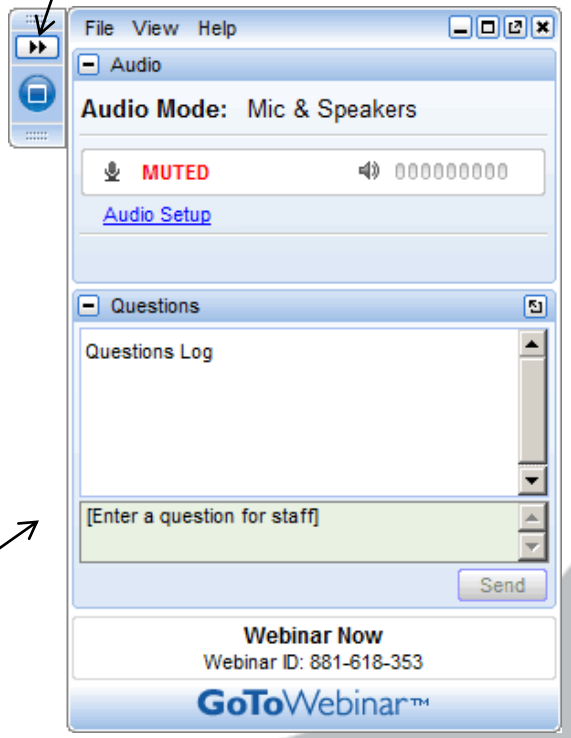
Programming with QuickField

The event is starting in a few minutes…



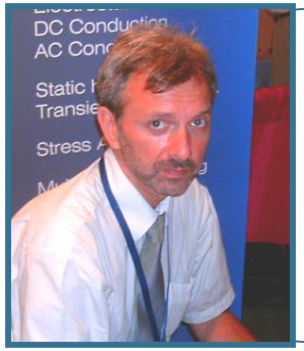
Change zoom here

Hide/show panel



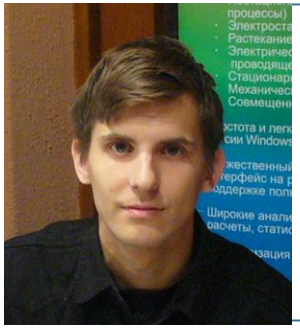
Please use QUESTIONS panel
to communicate with Webinar organizers

Speakers



Vladimir Podnos,
Director of marketing and support, Tera Analysis Ltd**.**

Programming with QuickField: problems and solutions



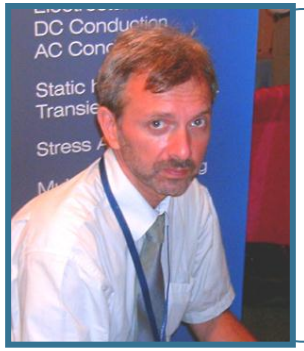
Alexander Lyubimtsev
Support engineer, Tera Analysis Ltd.

Practical example: relay dynamics with QuickField

Programming with QuickField

1. Why it is needed?
2. Development tools.
3. Relay dynamics with QuickField.

Programming with QuickField

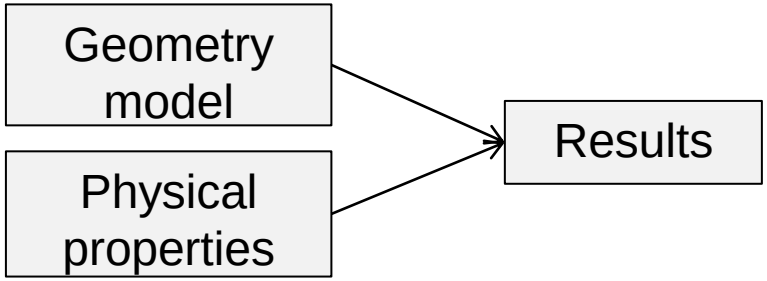


Vladimir Podnos,
Director of marketing and support, Tera Analysis Ltd**.**

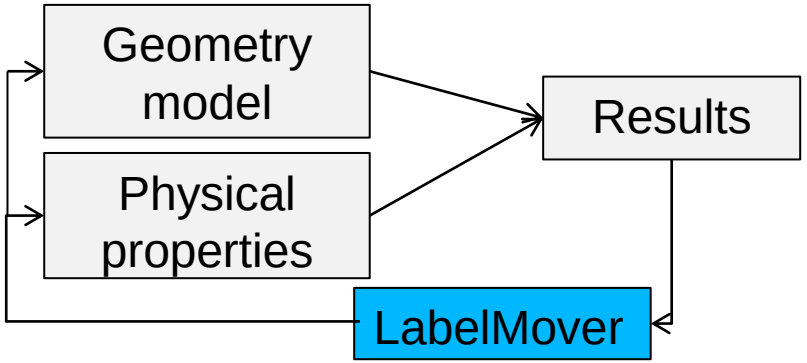
Programming with QuickField: problems and solutions

Why programming?

Direct problem



Inverse problem (optimization or identification)



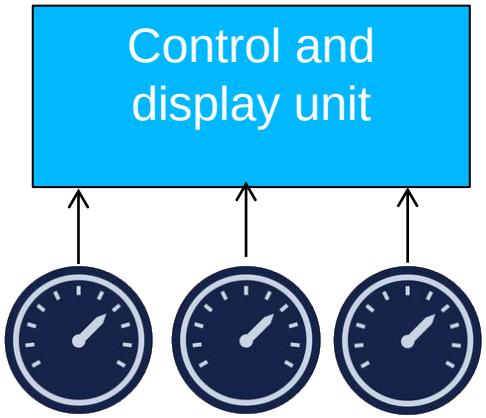
More complex problems (programming is required):

Dynamic FEA model adjustment basing on the sensors reading

Control system with the FEA model of the component

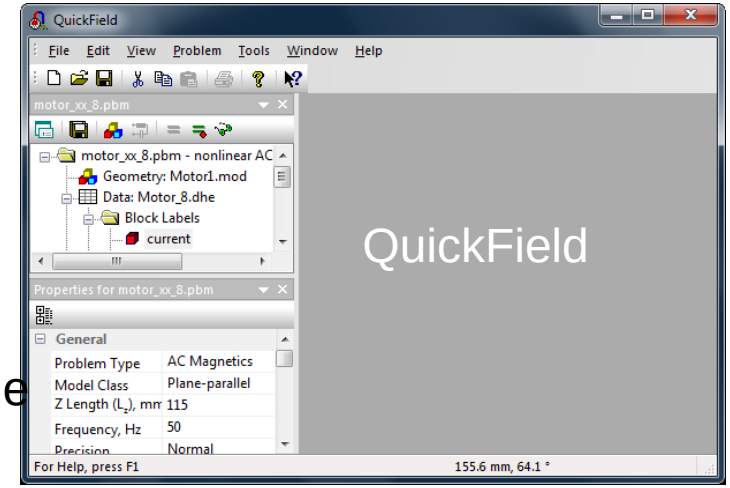
Dynamic mechanical analysis of the magnetic system presented by its FEA model

Dynamical FEA model adjustment basing on the sensors reading

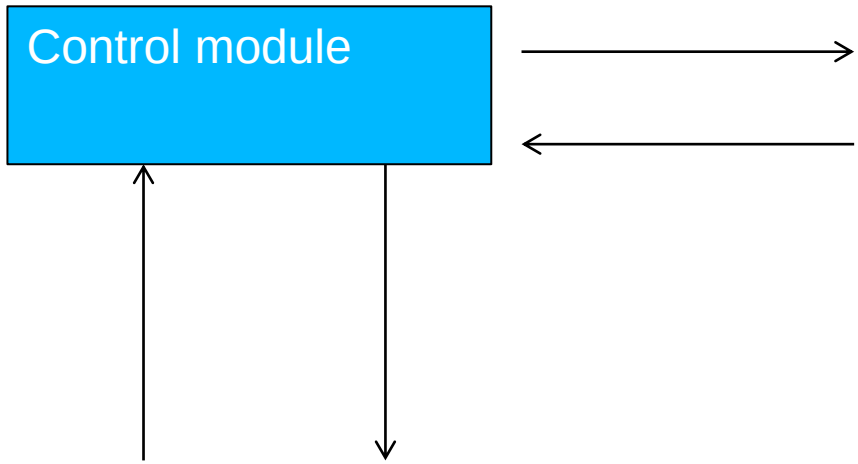


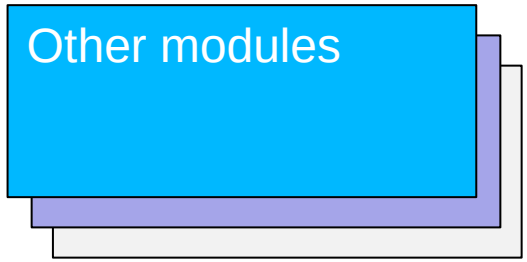
Time-varying boundary conditions

Calculated results in the specific model regions



Control system with the FEA model of the component



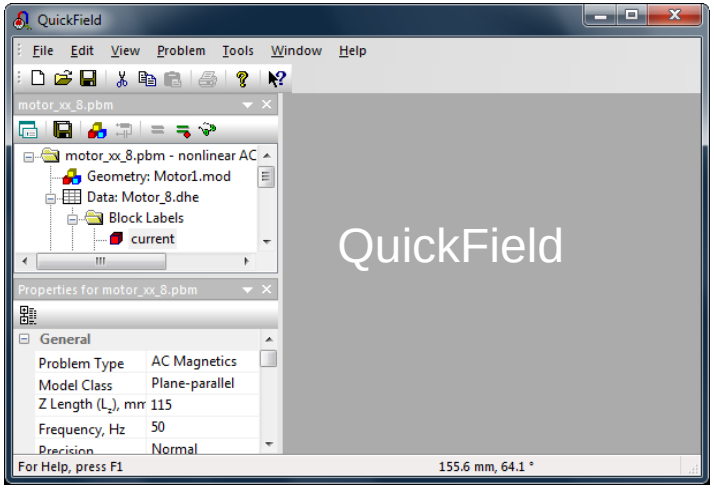


Dynamic mechanical analysis of the magnetic system presented by its FEA model

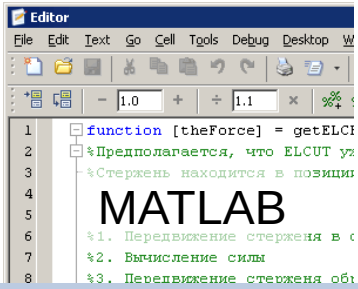
Dynamic and kinematic calculations

Position →

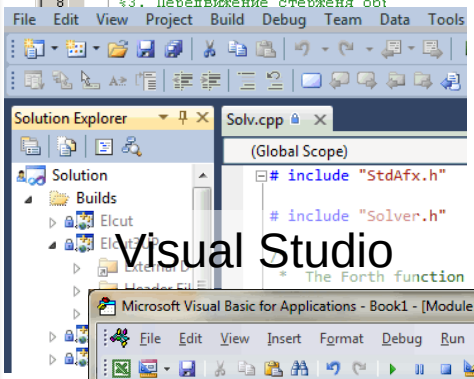
← Magnetic force



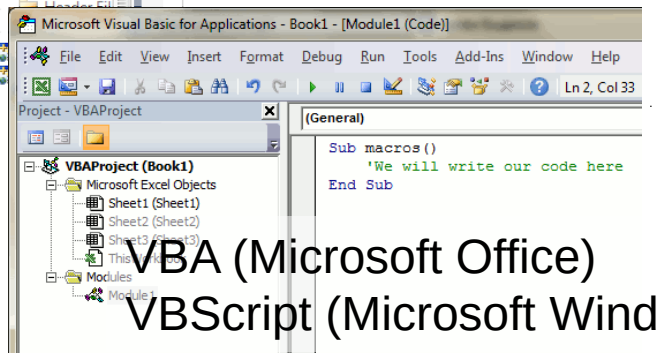
Development tools



MATLAB

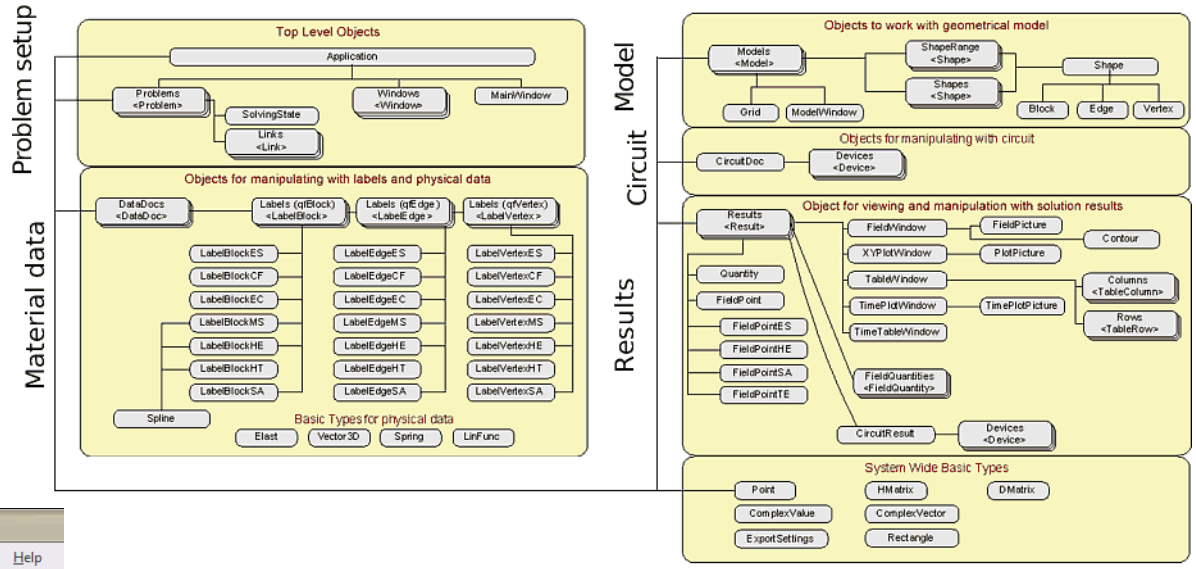


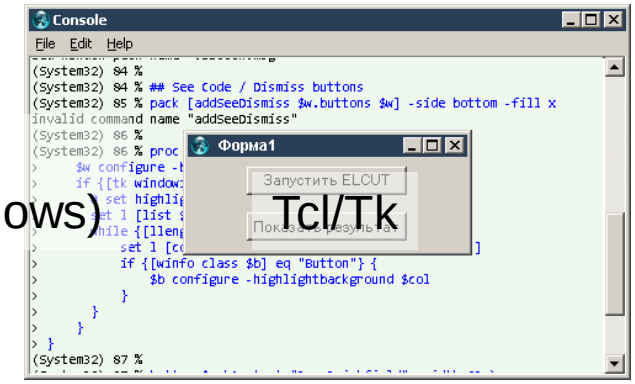
Visual Studio



VBA (Microsoft Office)
VBScript (Microsoft Windows)

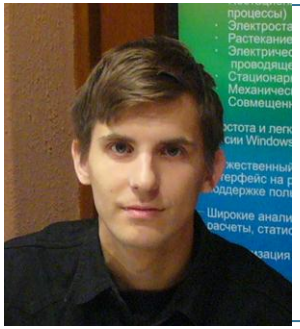
QuickField object model





Tcl/Tk

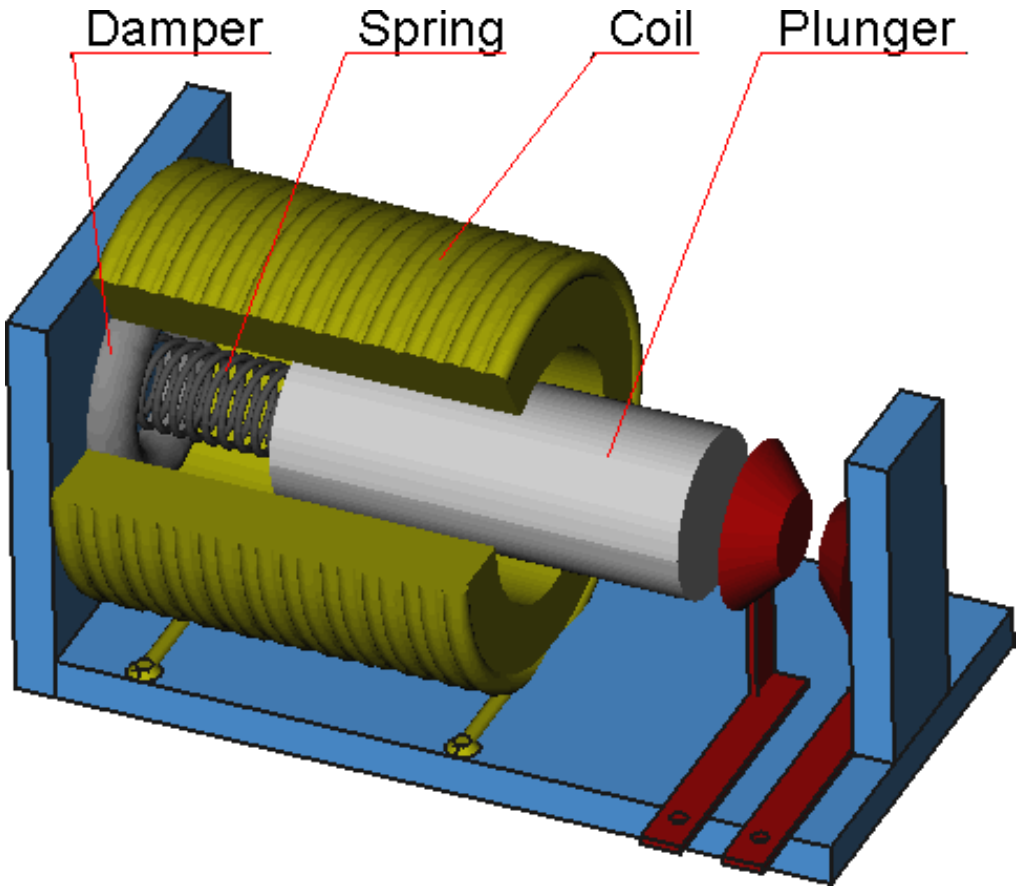
Programming with QuickField



Alexander Lyubimtsev
Support engineer, Tera Analysis Ltd.

Practical example: relay dynamics with QuickField

Relay dynamics



Data:

Plunger weight	4.5 g
Extended position	10 mm
Pull-in position	6 mm
Spring strength	4 N/m
Spring length	15 mm
Number of turns	1000
Current	0.45 A

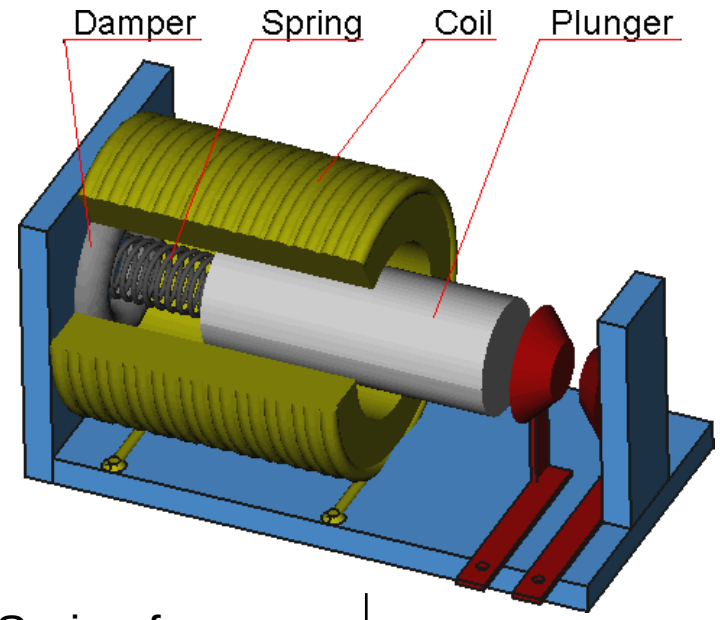
Equations:

$a = F / m$

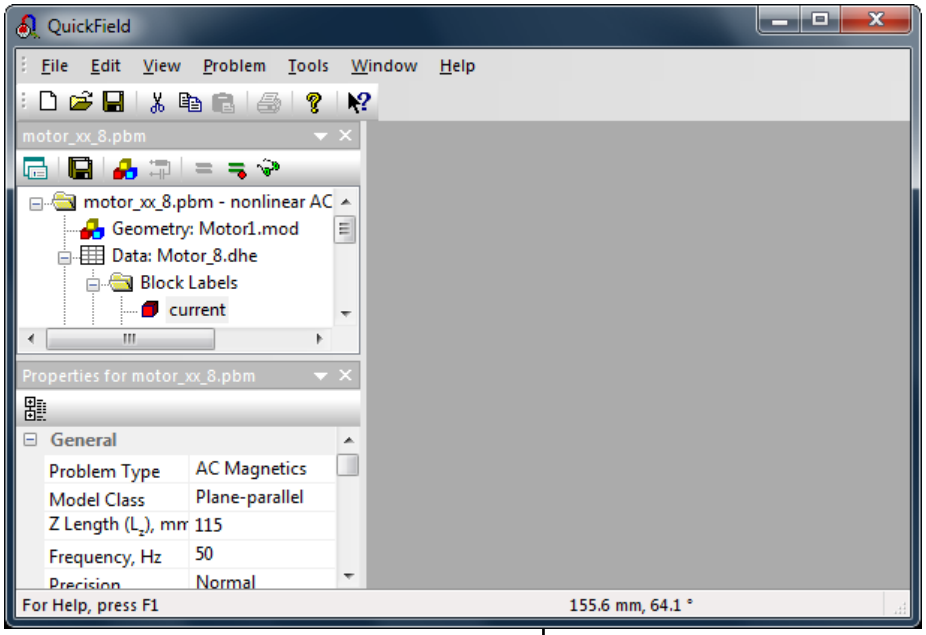
$v = v0 + a*dt$

$x = x0 + v*dt$

Relay dynamics



Spring force
$F_{spring}(x)$



Magnetic force
$F_{magnetic}(x)$

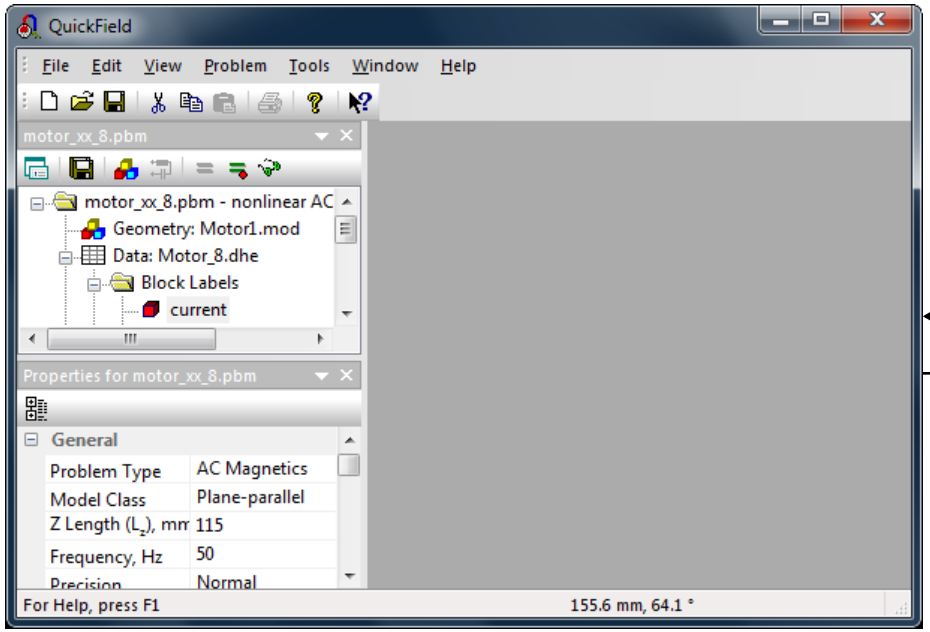
Equations:

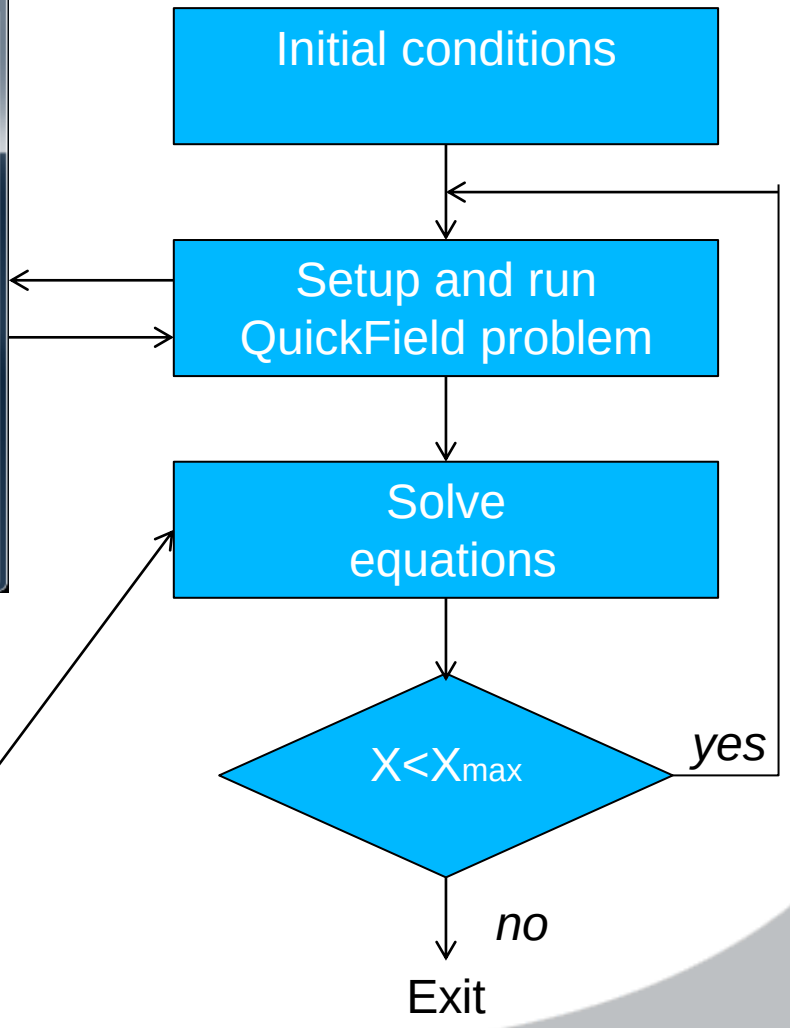
$a(x) = [F_{spring}(x) + F_{magnetic}(x)]/ m$

$v = v0 + a*dt$

$x = x0 + v*dt$

Relay dynamics





Equations:

$a = [F_{spring}(x) + F_{magnetic}(x)]/ m$

$v = v0 + a*dt$

$x = x0 + v*dt$