NOTES ON CODE VERSIONS AND FILENAMES ... Notes Written 25 Sept 2023 ...

FILENAME:
Mechtenna-c-2-face-ANGLES-MAG03-B2B-COMPAQ.cpp

TO DISPLAY 3D IMAGE OF MAGNETIC FIELD PATTERN IN THE RECTANGLE NEAR THE ELECTRET
NOT NEEDED ... lines 877 - 982 ... CAN REMOVE FROM COMPILATION USING /* .... */
OR CAN PUT INTO COMPILATION by Removal of /* .... */

ALSO SET BOOLEANS near lines 100-101, to display the 3D image
bool Multiple_Angles = false;
bool MAG03_display = false;

SET LOOK-AT around LINE 200. Toggle between

gluLookAt(-300 , -300 , 270, 0, 0, 0, 0,0,1); (oblique) , to display the 3D image
AND
gluLookAt(..... xy-plane only) to display the two-dimensional graphs

TO DISPLAY FIELDS AT SENSORS AS FUNCTION OF ANGLE

bool Multiple_Angles = true;
bool MAG03_display = true;

Remember one must include the VECTOR header file (also on GITHUB).

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MAGNETIC FIELD INDICATORS IN RECTANGLE NEAR ELECTRET
THICK ELECTRET (thickness increased compared with later runs) AT FIXED ANGLE

lines 115, 116: Electret thickness in metres:
variable h (height in metres)

h = .004 (large value to make Cuboid easier to see) for Figures 4.2 and 4.3
h = .000250 (Bickford's value, thin square electret) for later Figures

To remove Field Indicators within xy-plane, comment out lines 474 - 542 with /* ... */

Mechtenna-c-2-face-ANGLES-MAG03-B2B-COMPAQ.cpp
bool Multiple_Angles = false;
bool MAG03_display = false;
change VIEW ... use oblique angle, not view along negative-z axis

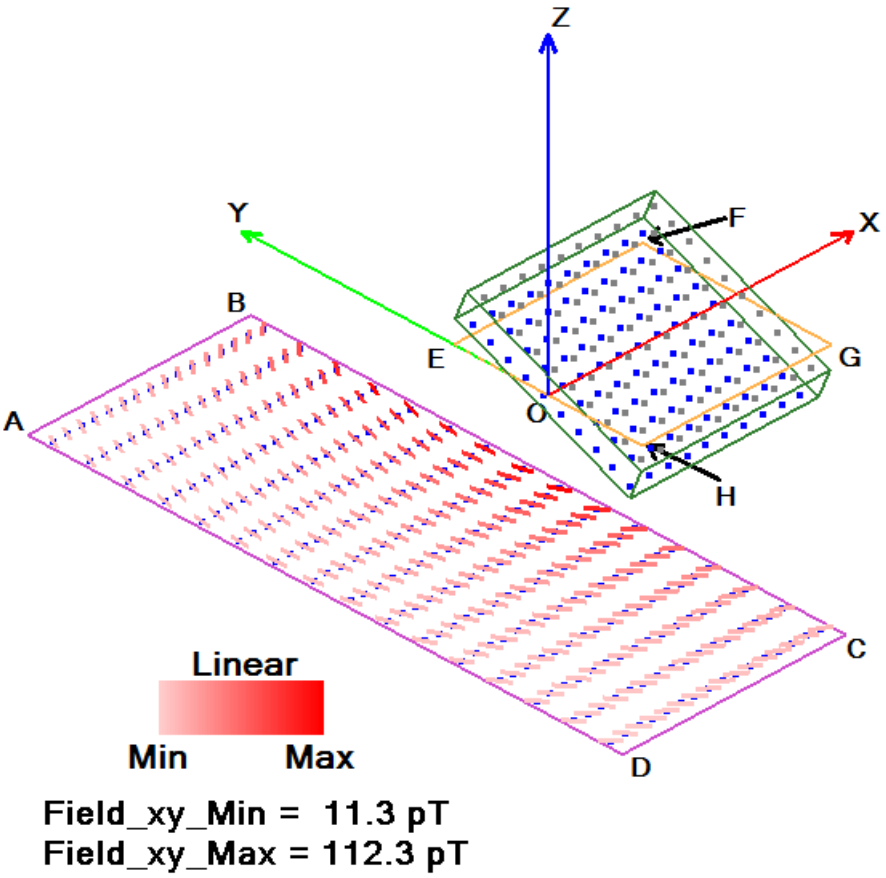

Figure 6.3, page 127

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VELOCITY VECTORS; LINE SEGMENTS EMANATING FROM POINT CHARGES
Mechtenna-c-2-face-ANGLES-MAG03-B2B-COMPAQ.cpp
To have program draw Velocity Vectors,
make lines 434-474 ACTIVE (remove /* .... */)

Comment out lines 434-474 to remove drawing Velocity Vectors

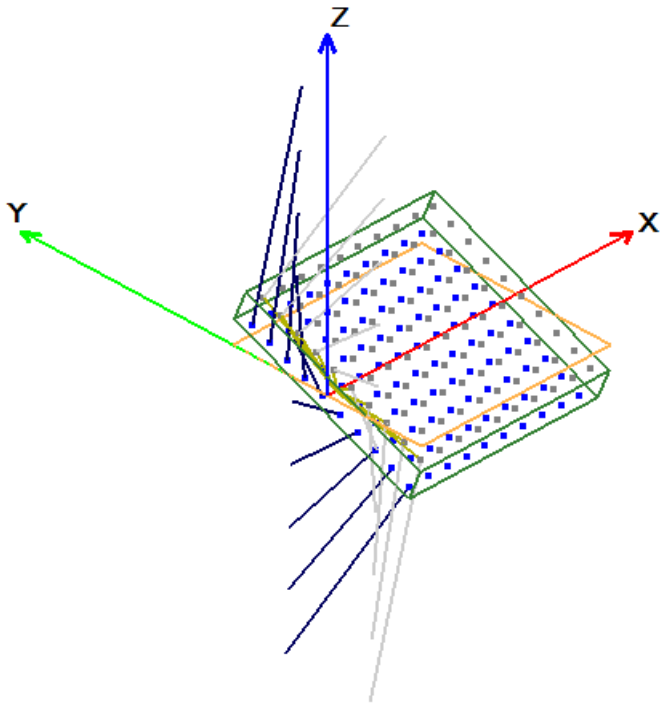

Figure 6.6, page 131

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MAGNETIC FIELD INDICATORS IN RECTANGLE NEAR ELECTRET
ELECTRET AT FIXED ANGLE

Mechtenna-c-2-face-ANGLES-MAG03-B2B-COMPAQ.cpp
bool Multiple_Angles = false;
bool MAG03_display = false;
change VIEW ...

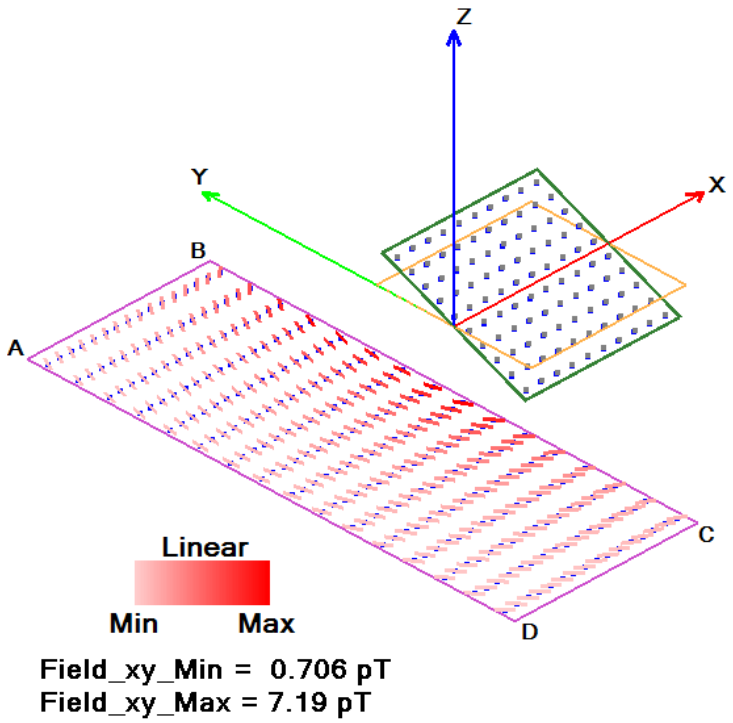

Figure 6.8 page 133

lines 115, 116: Electret thickness in metres:
variable h (height in metres)
THIS TIME USE
h = .000250 (Bickford's value in metres, thin square electret)

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SENSOR YZX FIELD VALUES AS FUNCTION OF ANGLE

Mechtenna-c-2-face-ANGLES-MAG03-B2B-COMPAQ.cpp
bool Multiple_Angles = true;
bool MAG03_display = true;
change VIEW ...

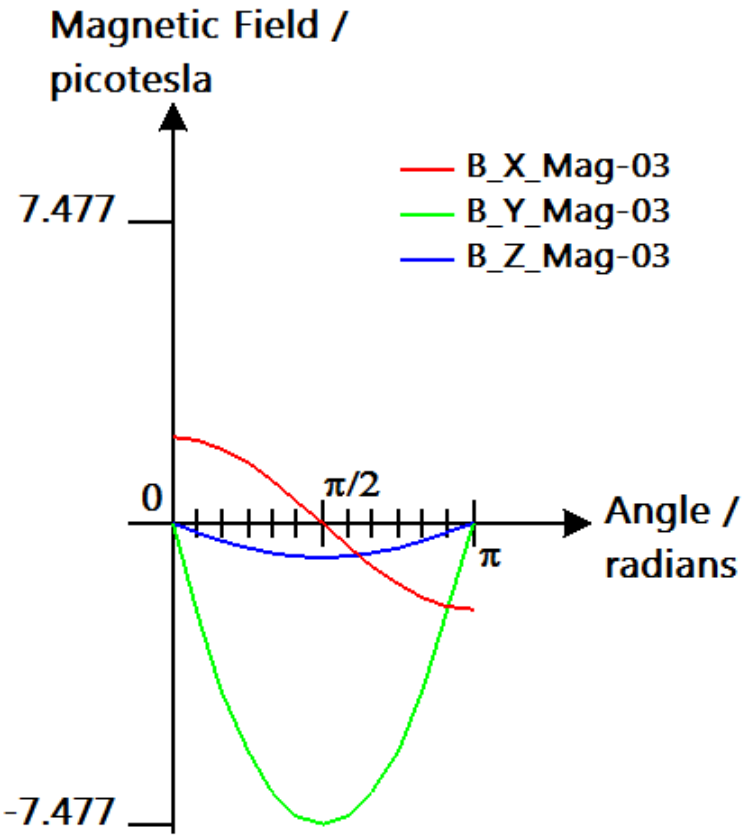

Figure 6.20 page 146

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Simulation Code with Mag-03 Included
Field for Spinning Electret at One Angle

Mechtenna-C-2-face-ANGLES-MAG03-B-z1gap.cpp

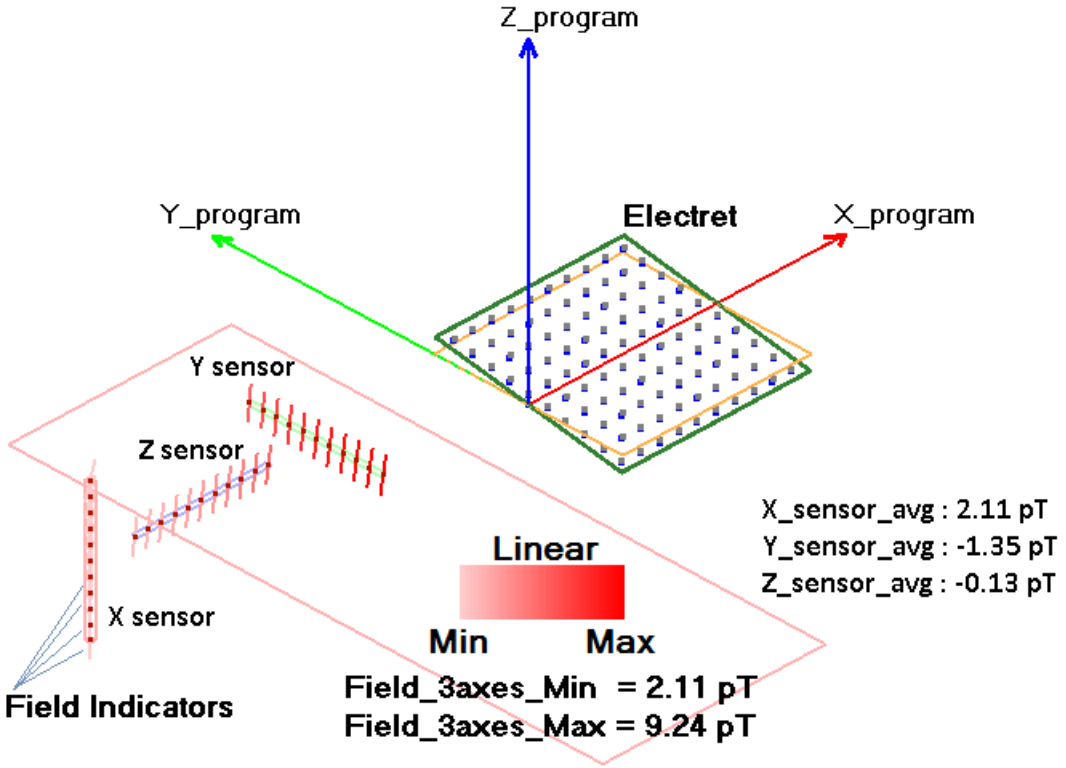

Figure 6.19

BOOLEAN VARIABLE SETTINGS NEEDED ARE:
bool Multiple_Angles = false;
bool MAG03_display = true;
bool multiple_z1_gap = false;

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MAGNETIC FIELD AS FUNCTION OF DISTANCE TO SENSOR ELEMENTS

Mechtenna-C-2-face-ANGLES-MAG03-B-z1gap.cpp

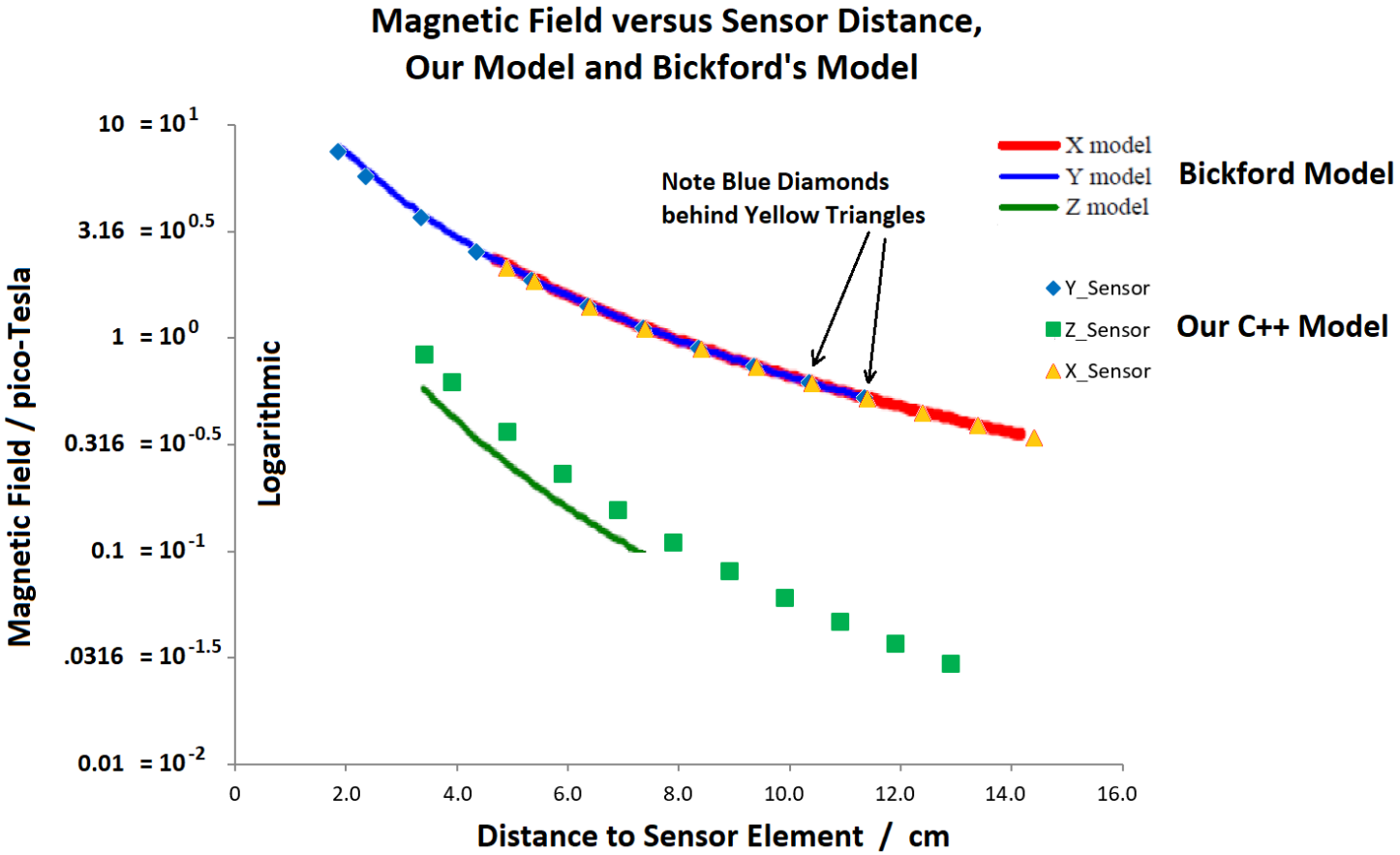

Figure 6.22 page 150

BOOLEAN VARIABLE SETTINGS NEEDED ARE:
bool Multiple_Angles = true;
bool MAG03_display = true;
bool multiple_z1_gap = true;

Program will output a comma-separated (csv) data file with filename
file-4-output.csv
To make the graphical image in Figure 6.22, this *csv* file was first imported into Microsoft Excel, then additional columns in the Excel Worksheet were made to calculate the logarithms of the picotesla values for the field strengths, and then Excel's graph plotting feature was used. Next, the plot was scaled appropriately then overlayed on the image taken from Bickford's presentation.

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Simulation of Equivalent Perpendicular Coils

Mechtenna-c-2-face-ANGLES-MAG03-B2B-2-wire-loop-phases.cpp

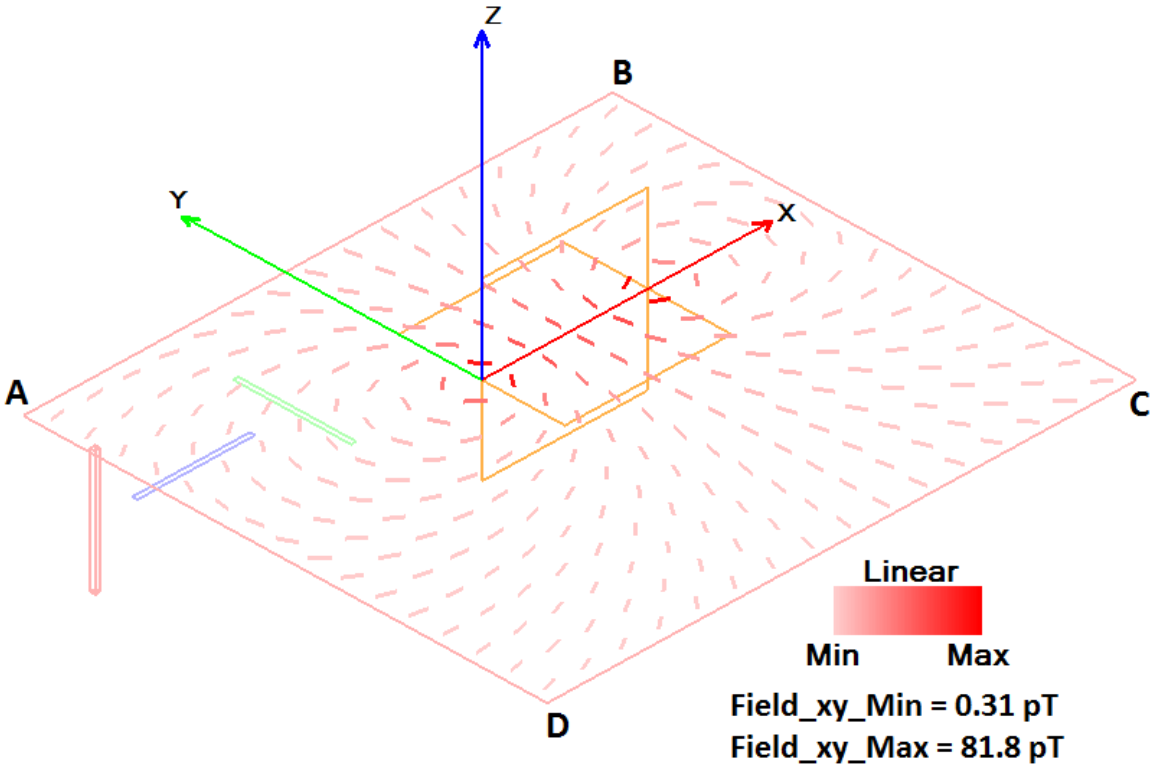

Figure 7.9 page 159

BOOLEAN VARIABLE SETTINGS NEEDED ARE:

bool Multiple_Angles = false;
bool Multiple_Phases = false;
bool MAG03_display = false;

* * * also fiscuss the display gunvtion camrta posutuib

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Simulation of Equivalent Perpendicular Coils - plot of fields at Mag-03 as function of phase angle of currents

Mechtenna-c-2-face-ANGLES-MAG03-B2B-2-wire-loop-phases.cpp

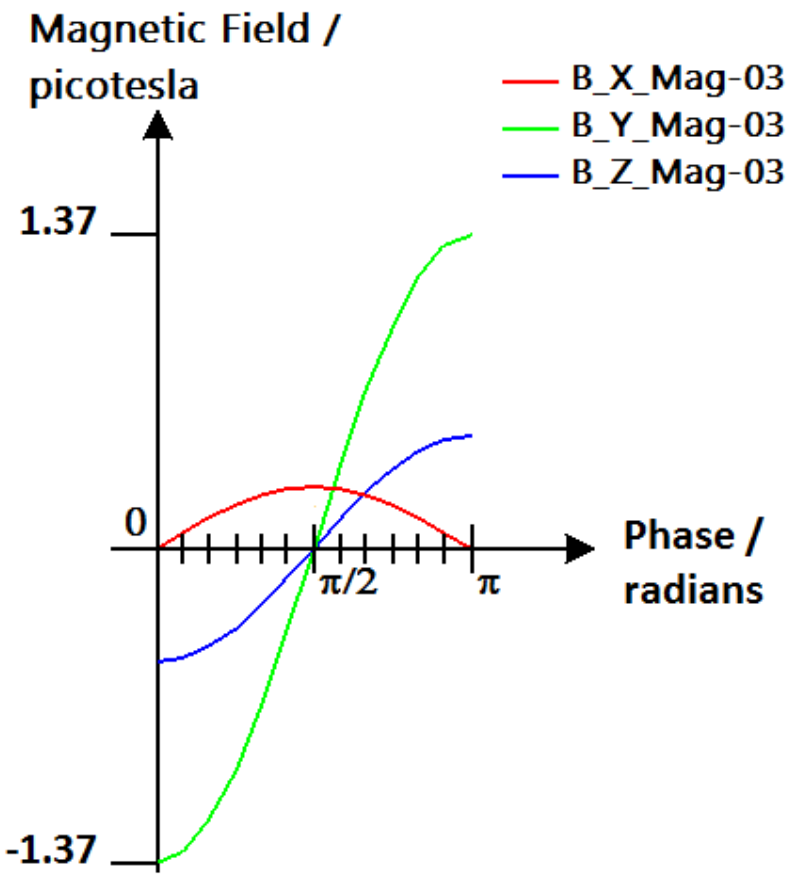

Figure 7.10 page 160

bool Multiple_Angles = false;
bool Multiple_Phases = true;
bool MAG03_display = true;

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THIN SQUARE ELECTRET ROTATING OFF CENTER

Mechtenna-c-2-face-ANGLES-MAG03-B2B-COMPAQ-off-centre-2b-Diagrams.cpp

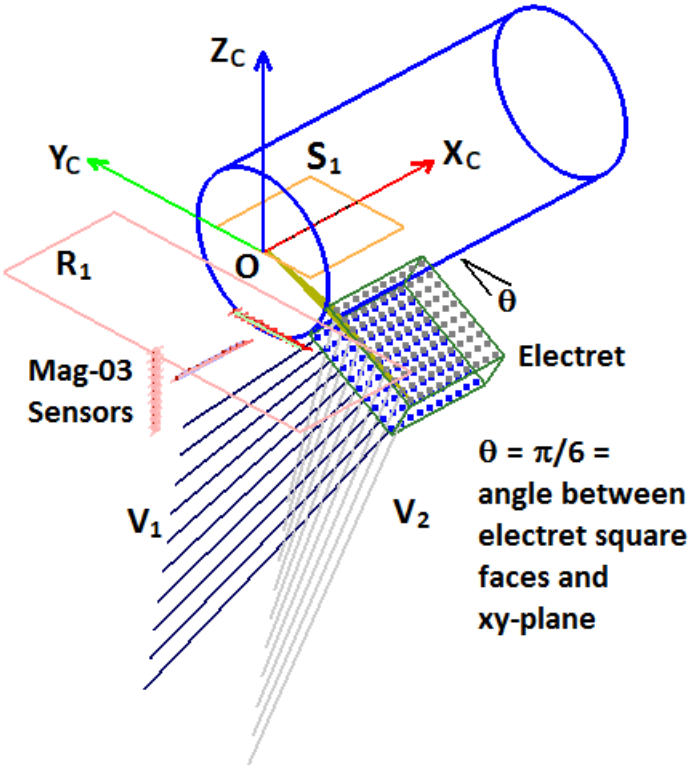

Figure 8.1 page 166

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ANGULARLY SLICED CYLINDRICAL CAPACITOR

Mechtenna-inner-outer-cylinder-sections-B2B.cpp

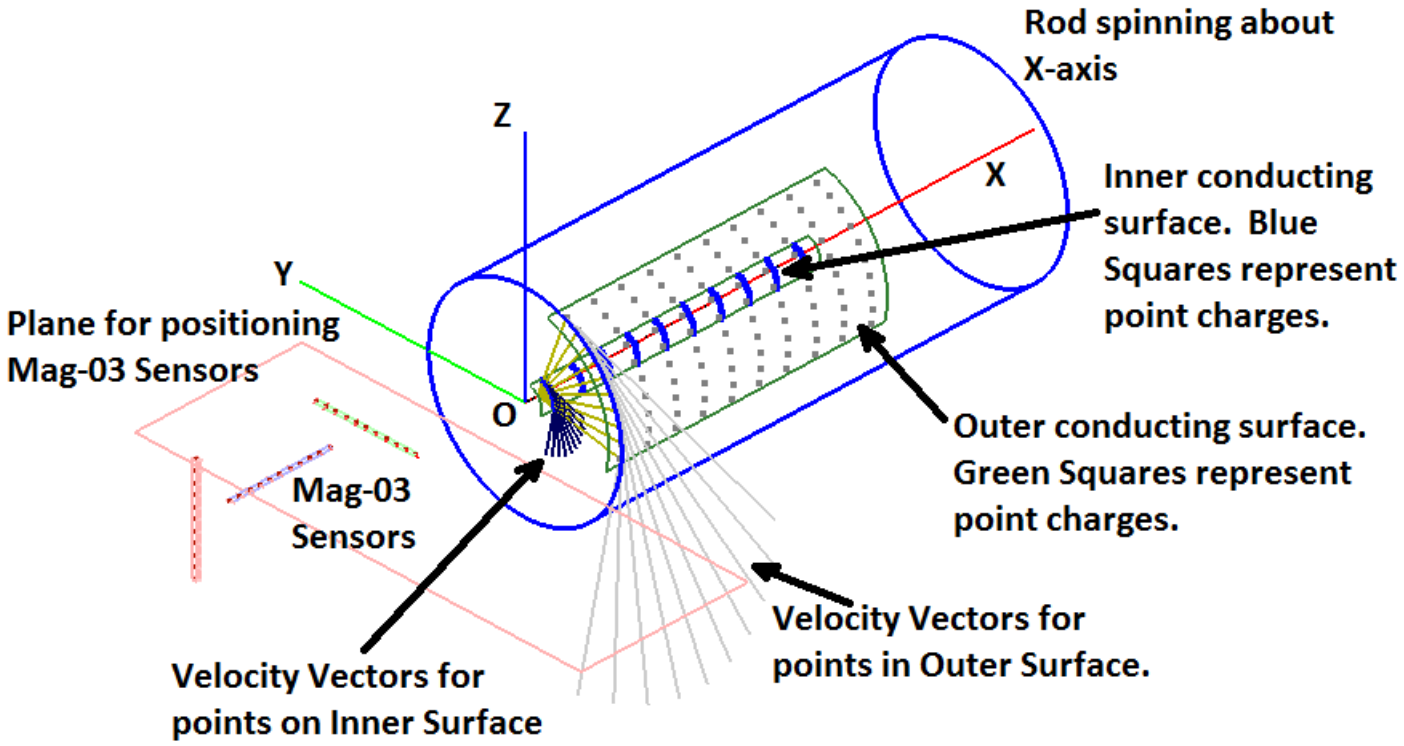

Figure 8.4 page 170

previous footnote
For Figure 8.4, Filename = Mechtenna-inner-outer-cylinder-sections-B2B.cpp. Line 1005 is not
active, line 1005 is to remove the inner surface charge.

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CHEN WANG SIMULATION

Mechtenna-cylinder-B2-multiple-phi-B-nov21-2c.cpp

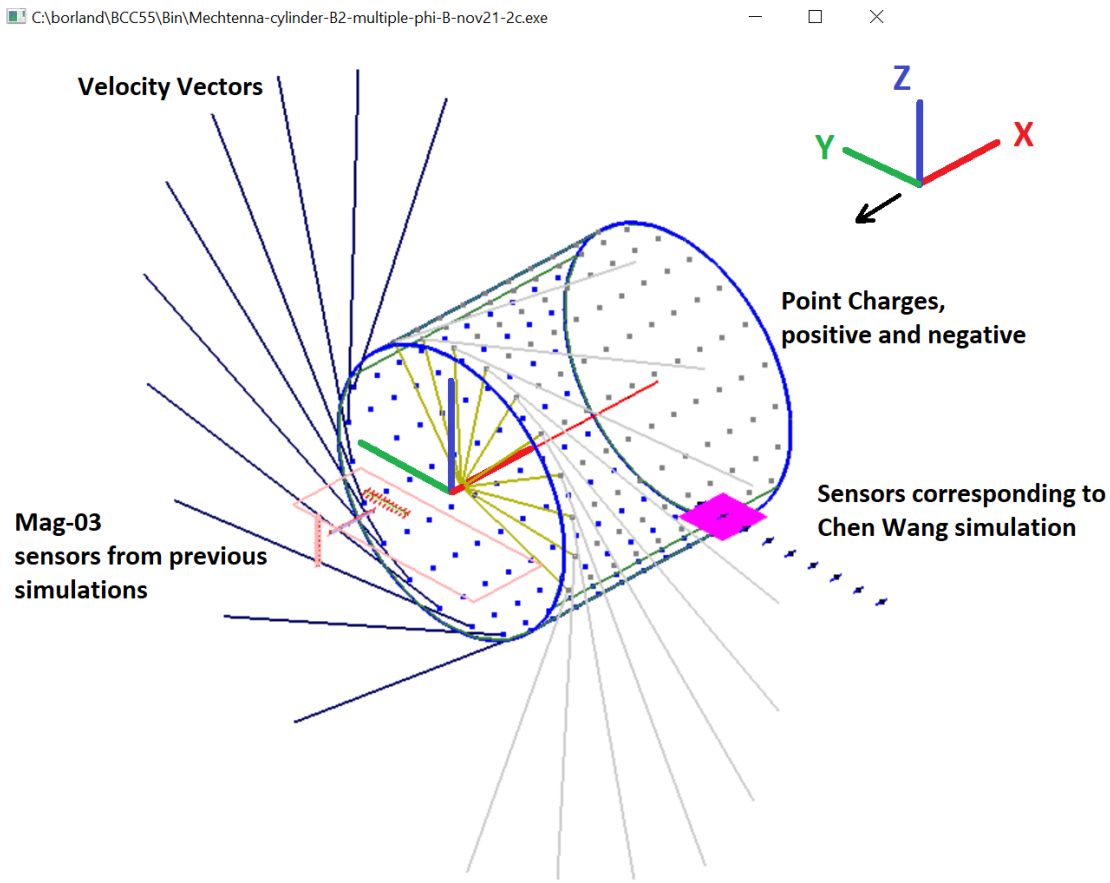

Figure 8.11 page 178

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ELECTRIC FIELD OUTSIDE ROTATING CAPACITOR

Mechtenna–COMPAQ-Mar-21-D2.cpp

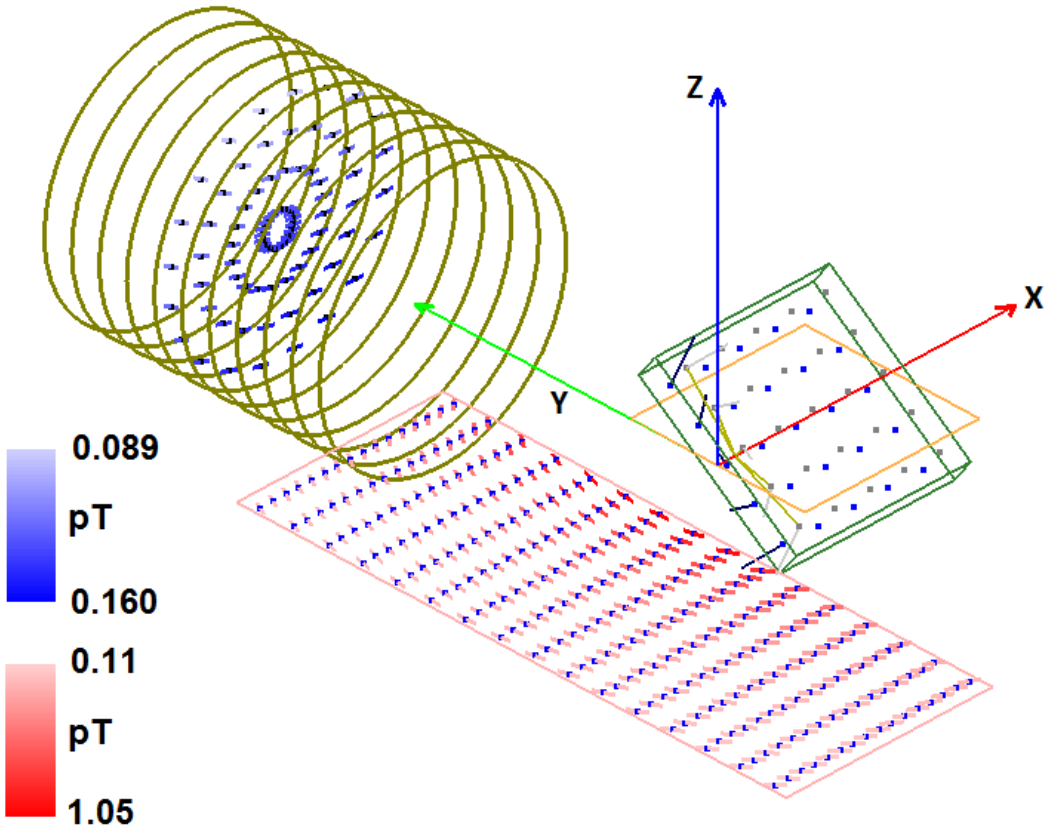

Figure 9.25 page 200

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Mechtenna–COMPAQ-Mar-21-E-elec.cpp

..E2-elec is with different settings perhaps is for the subsequent Graphs

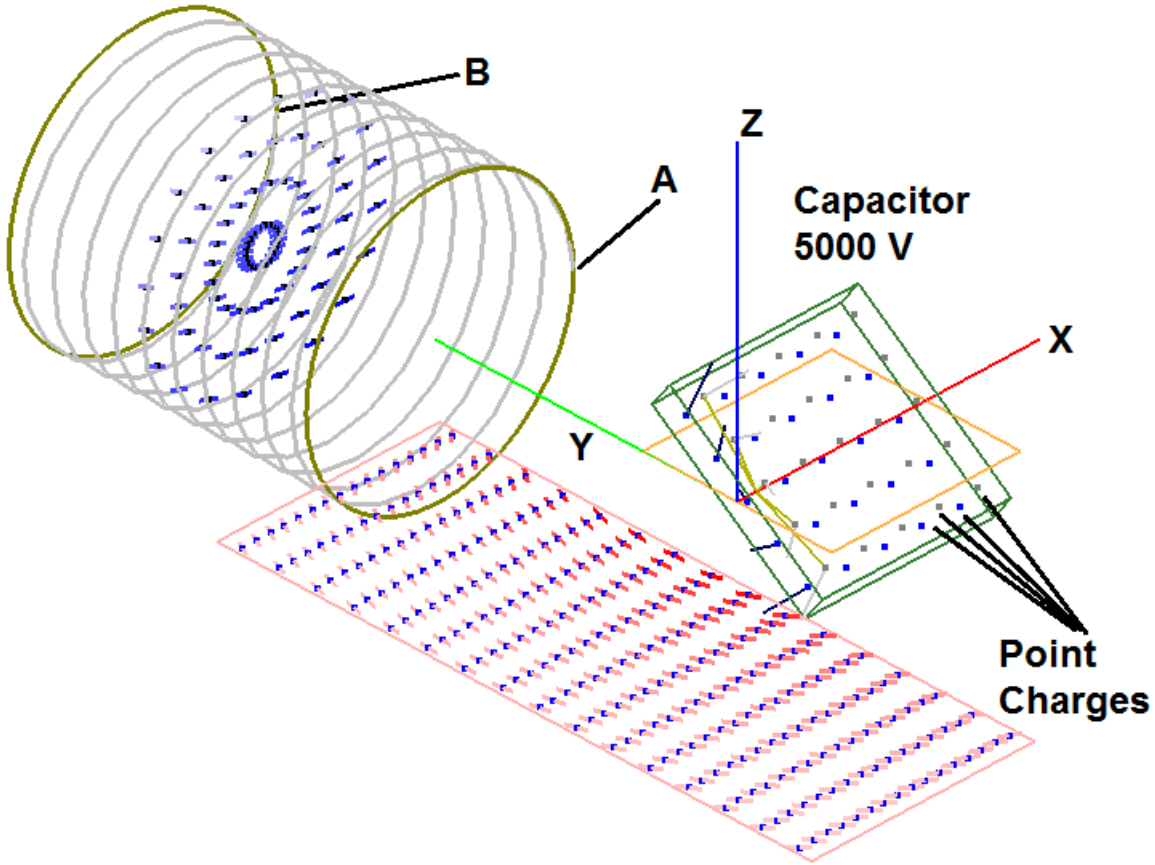

Figure 9.27 page 203