Ansys Maxwell Task 6

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Fields and waves

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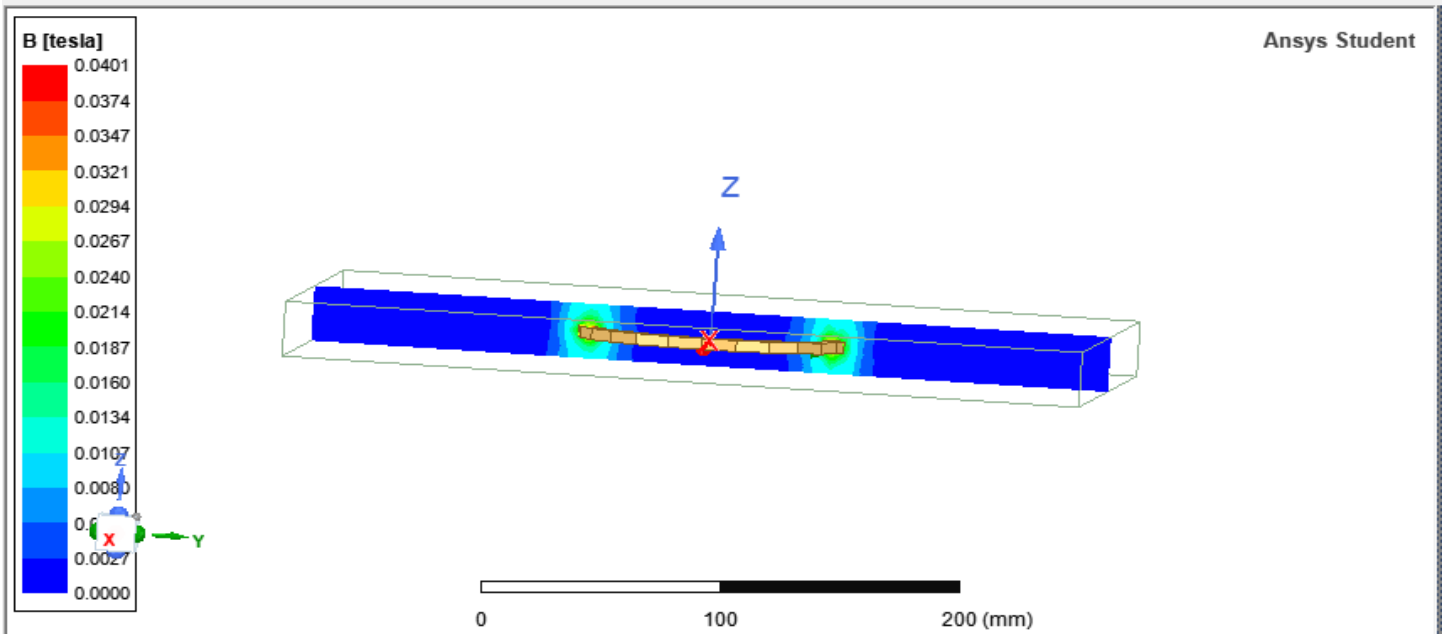
Assignment statement

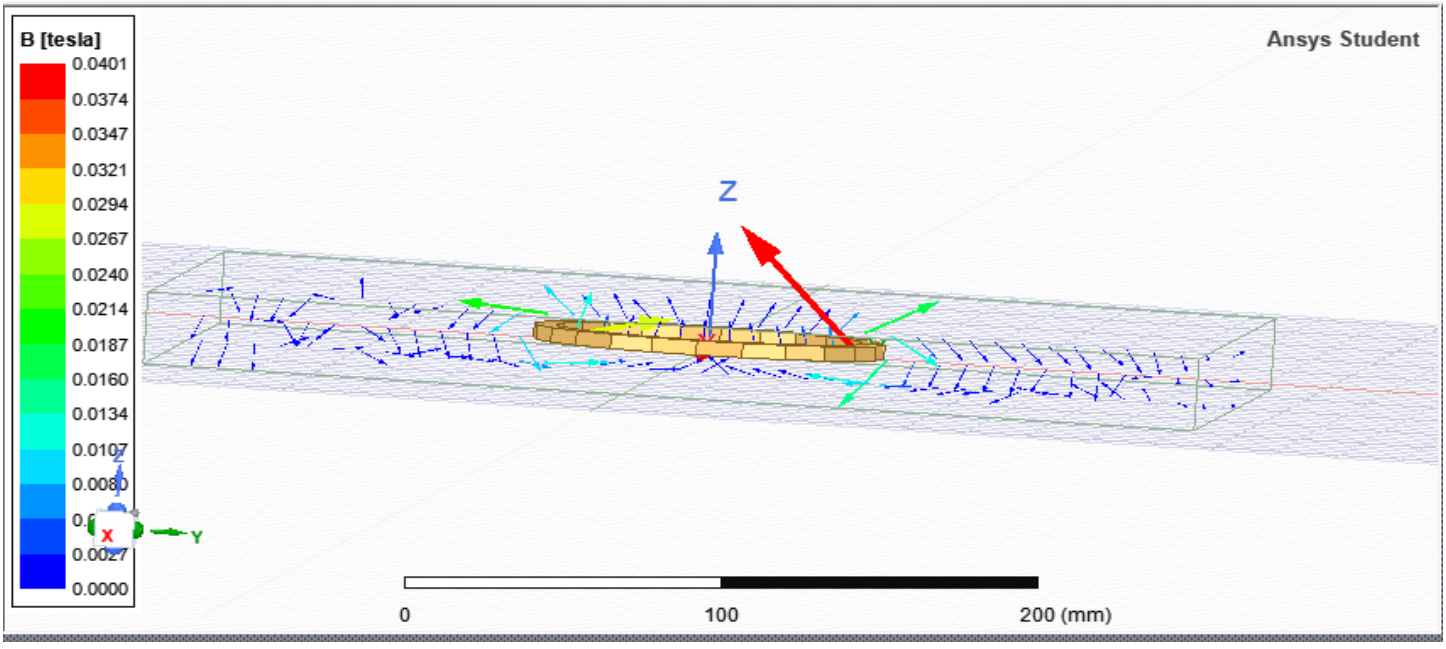
Generate the magnetic flux density B generated by a coil. The outer diameter of the coil is 8 cm and the inner diameter is 7 cm and the height is 0.5 cm. excite the coils with a DC current of 500 A.

Plot the B field on a cut plane passing through the center of the coil. Provide the arrow (vector) plot of B.

The Magnitude of B

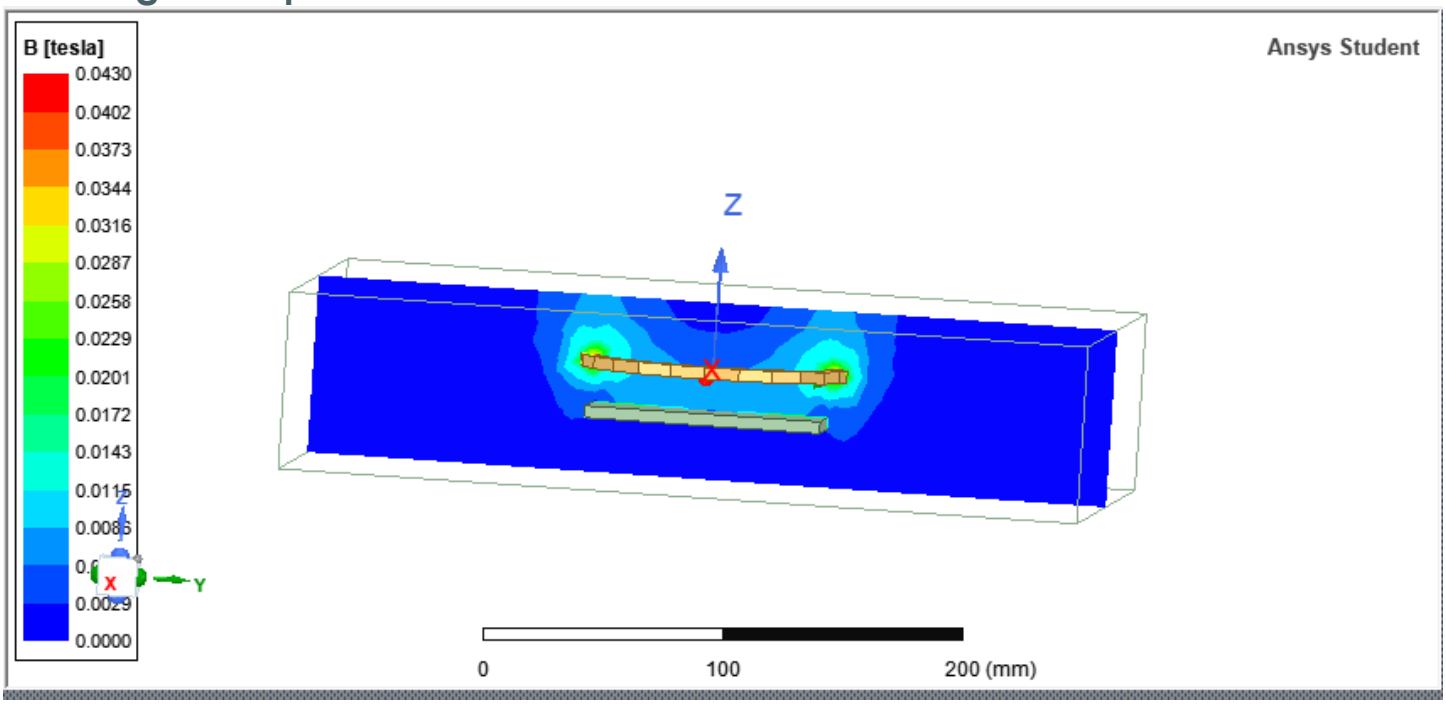


The vector plot of B

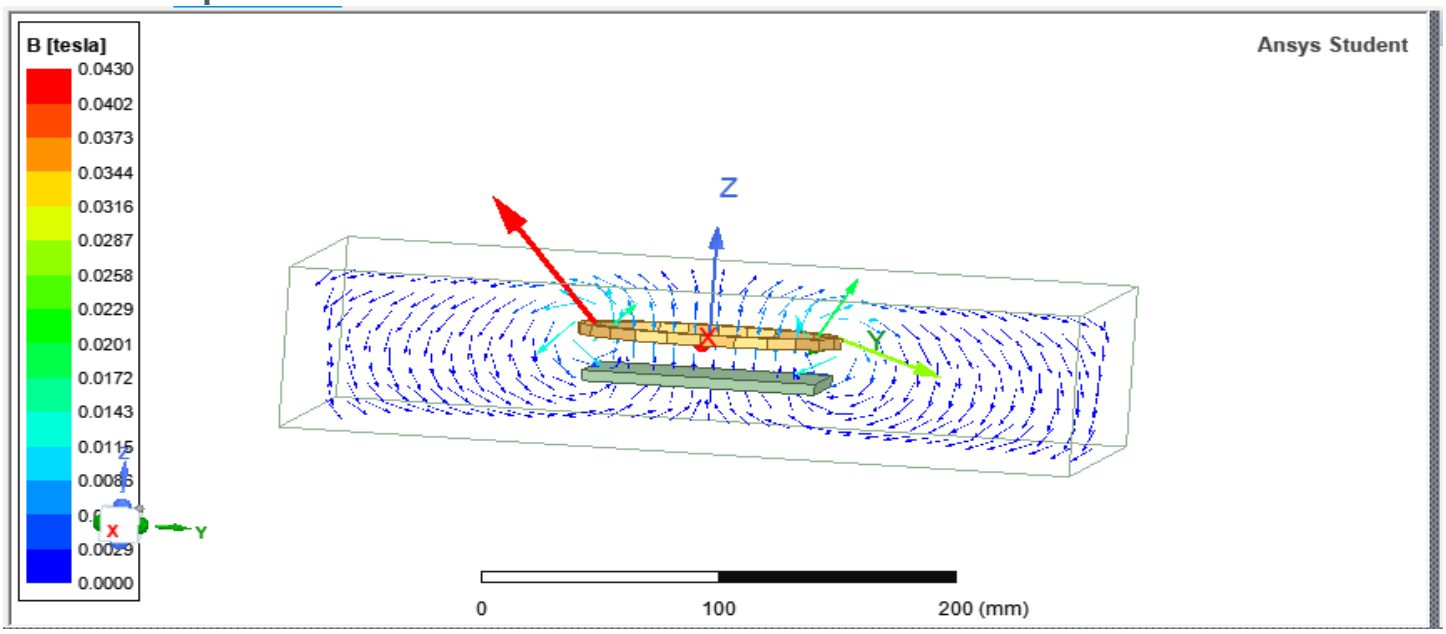


If you place a 10 cm mu metal plate 2 cm under the coils, what happens to the B field one Cm under the plate.

The magnitude plot of B



The vector plot of B

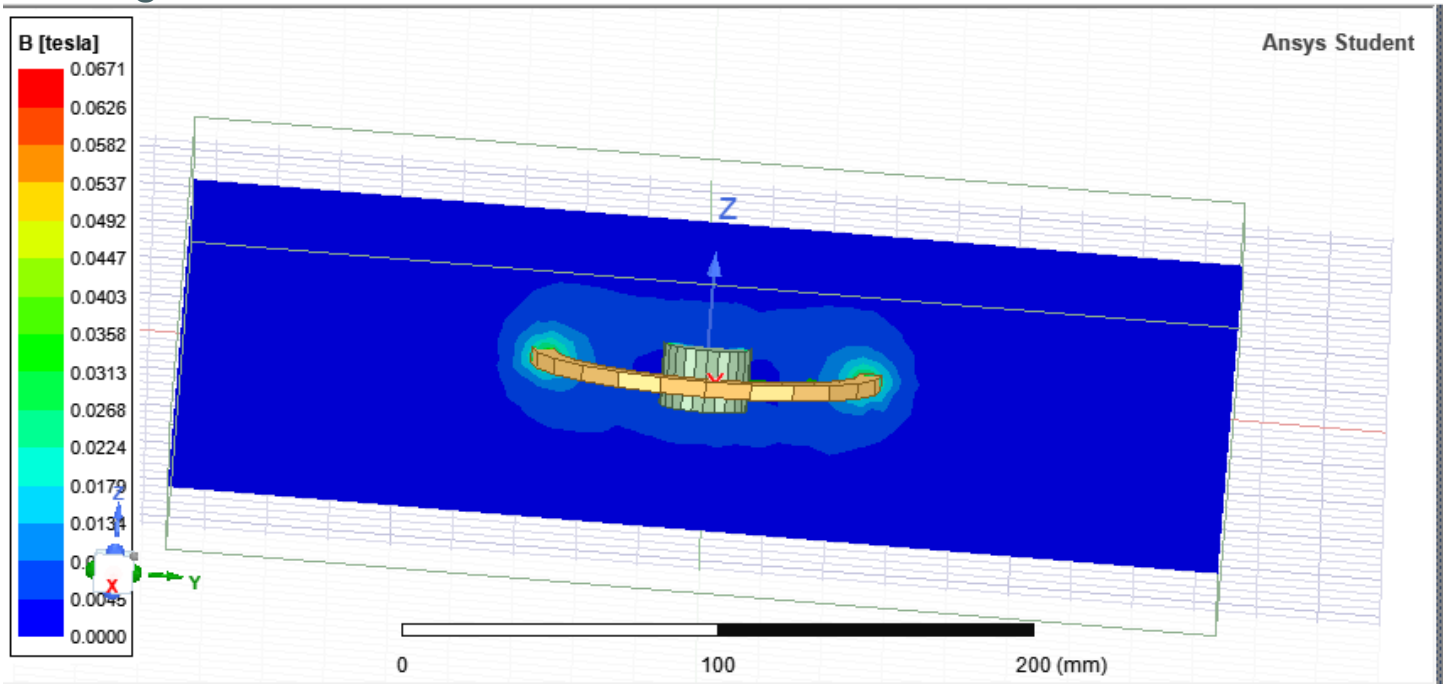


Write your observation.

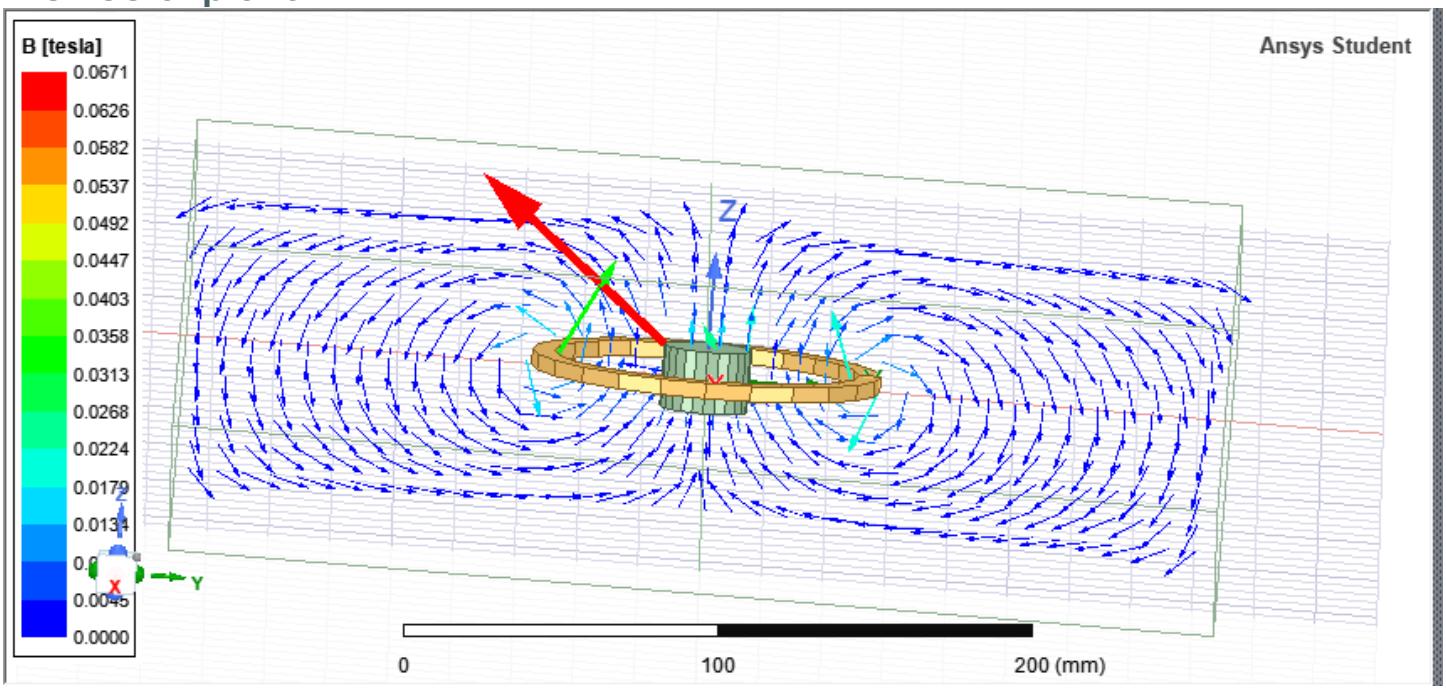
The MU plate causes the field to be drawn towards the plate. So, the field is stronger in the direction of the MU plate especially towards its center.

Place a ferromagnetic cylinder (Iron) at the center of the coil: d= 2 cm, height = 2 cm.
Plot B field on a cut plane passing through the center of the coil. Provide the arrow (vector) plot of B.

The Magnitude of B



The vector plot of B



What happens to the flux lines?
Ans: gets drawn towards the magnetic more