

Diametrically oriented magnets:

In these analyses two solution types have been utilized (magnetostatic and transient). In all graphs the angle θ is an angle difference between the magnetic axis of the north pole and the positive y direction of the coordinate system. The rotation direction is counter clock wise. x-axis of all graphs is aligned with $\theta = 0$.

-Stator and rotor are selected as steel 1008 from Maxwell's library.

-PM's are chosen to be NdFe35

-North pole is represented by red color.

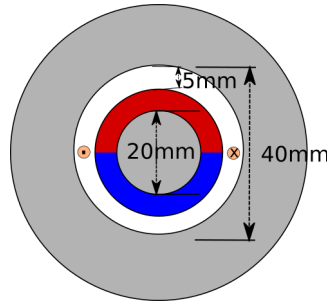


Figure 1: Magnetic System

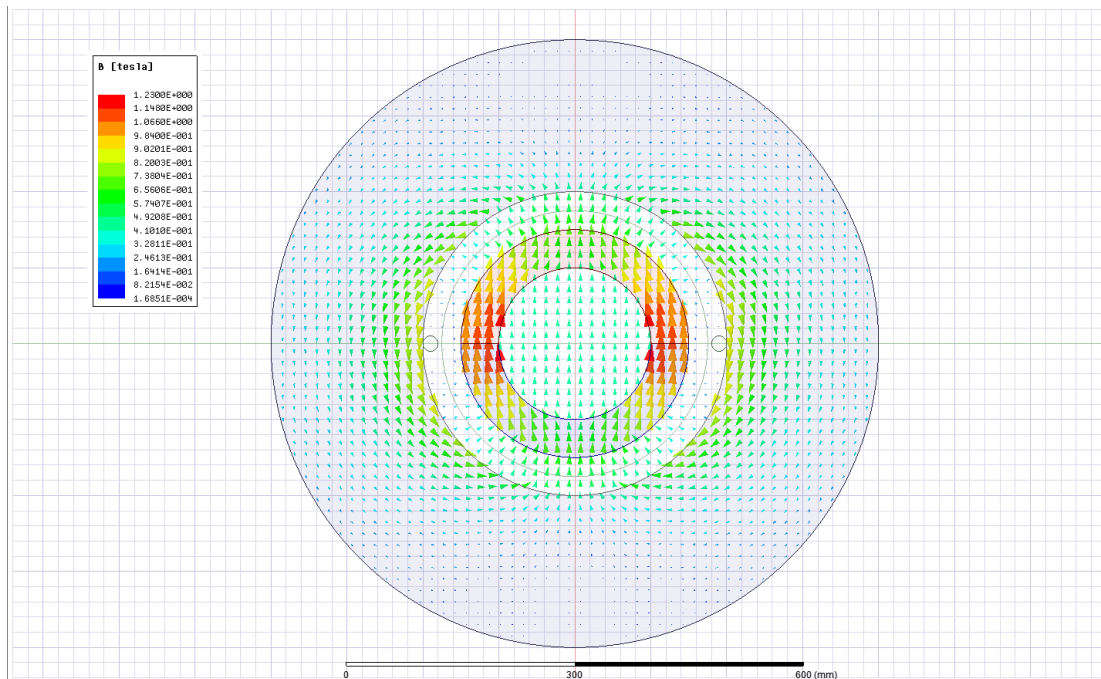


Figure 2: Flux Density Vector

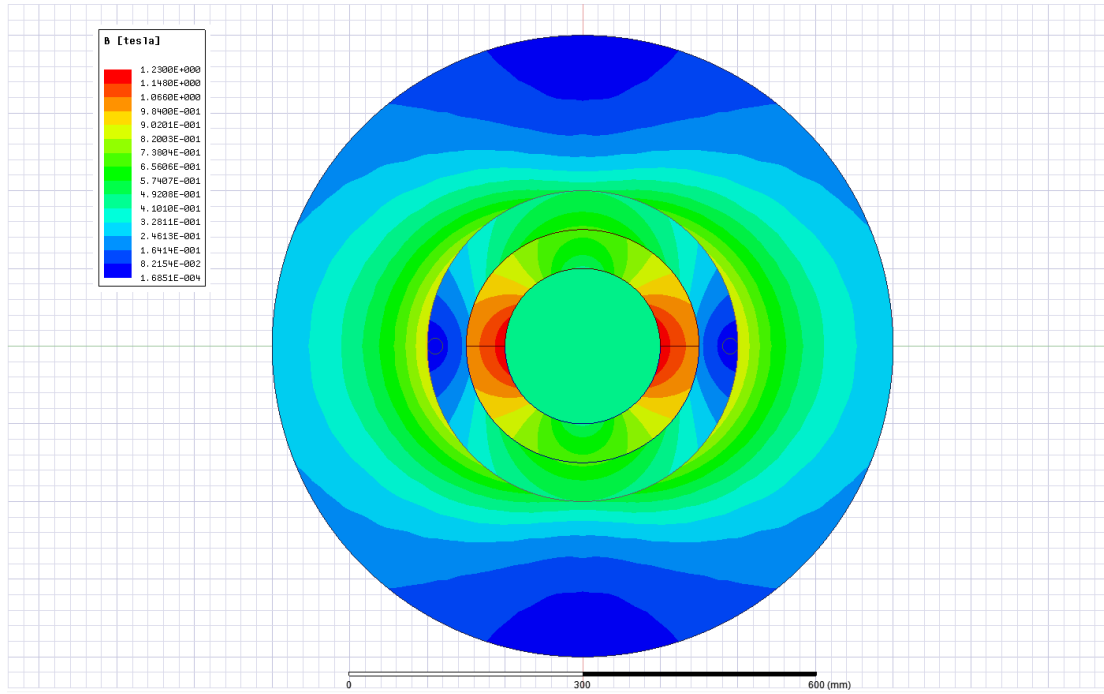


Figure 3: Flux Density Magnitude

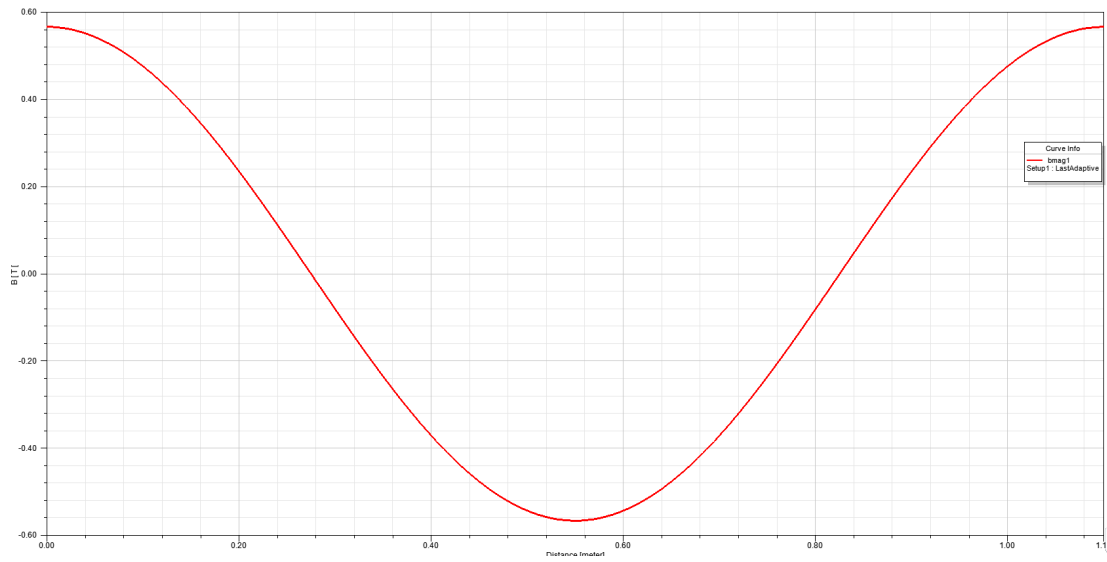


Figure 4: Flux Density Distribution around the air gap

Rotor rotates at 1500 r.p.m(Transient Alaysis-360 degree rotation):

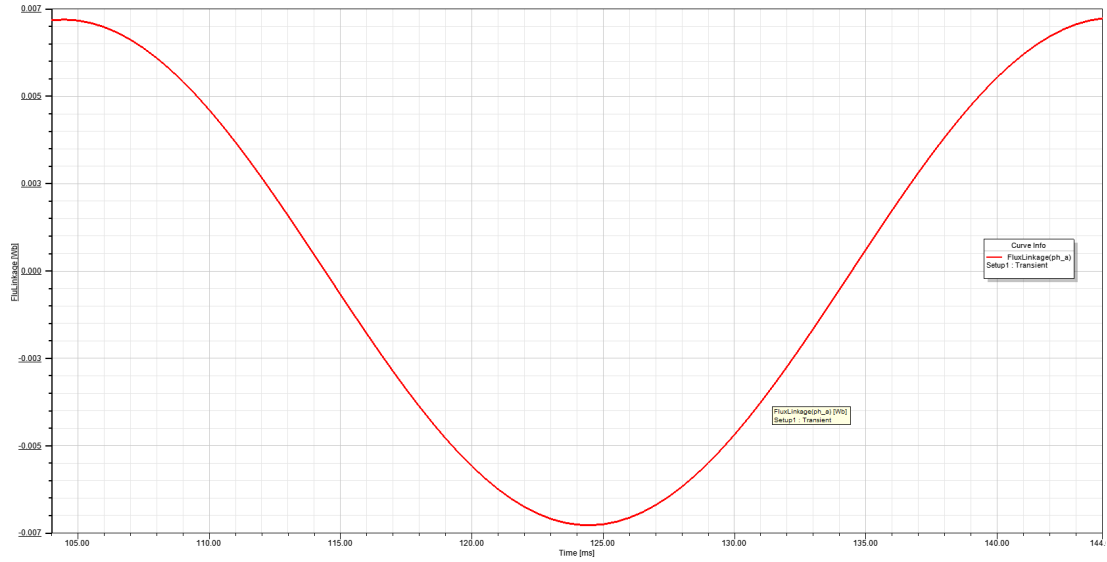


Figure 5: Flux linkage w.r.t time (0 to 360 degree)

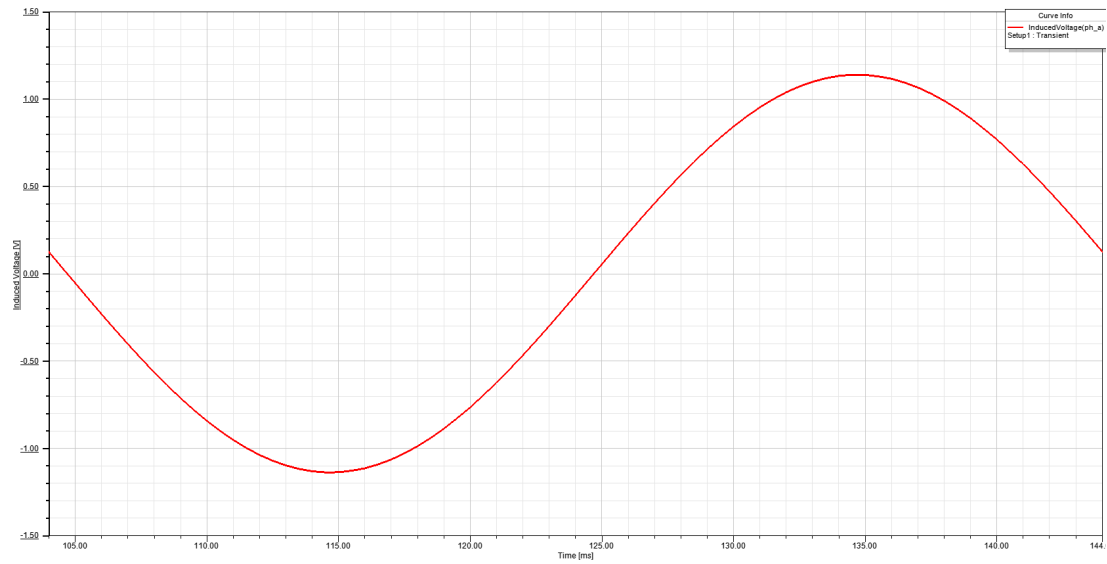


Figure 6: Induced Voltage w.r.t time

Radially Magnetized PM:
Rotor is stationary:

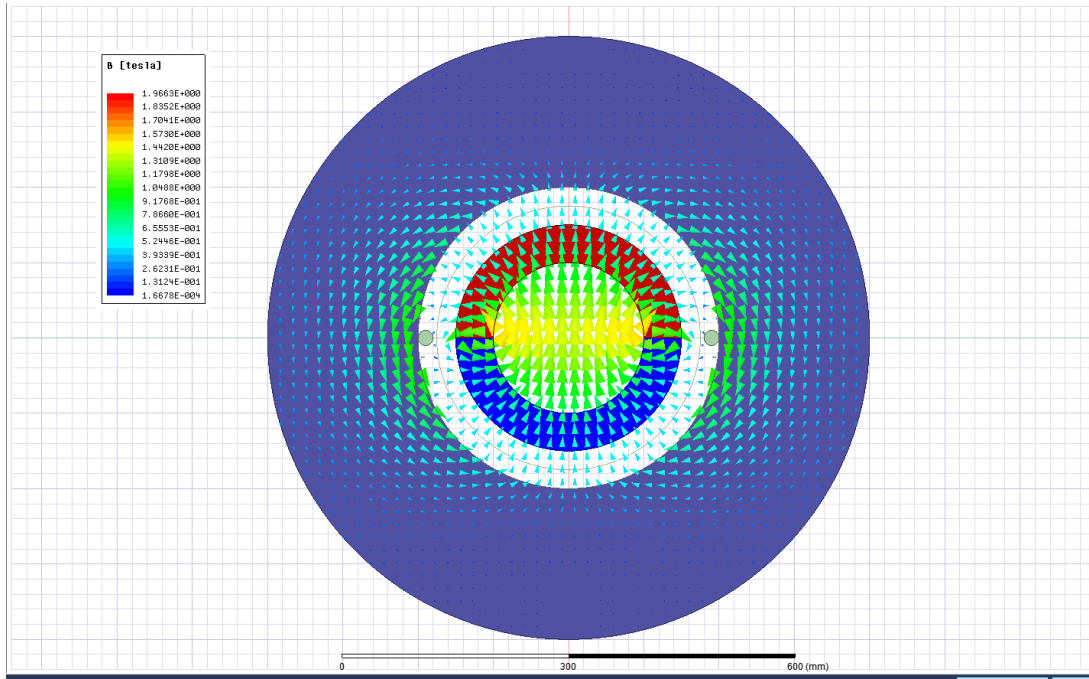


Figure 7: Magnetic Flux Density Vector Radially Magnetized Magnets

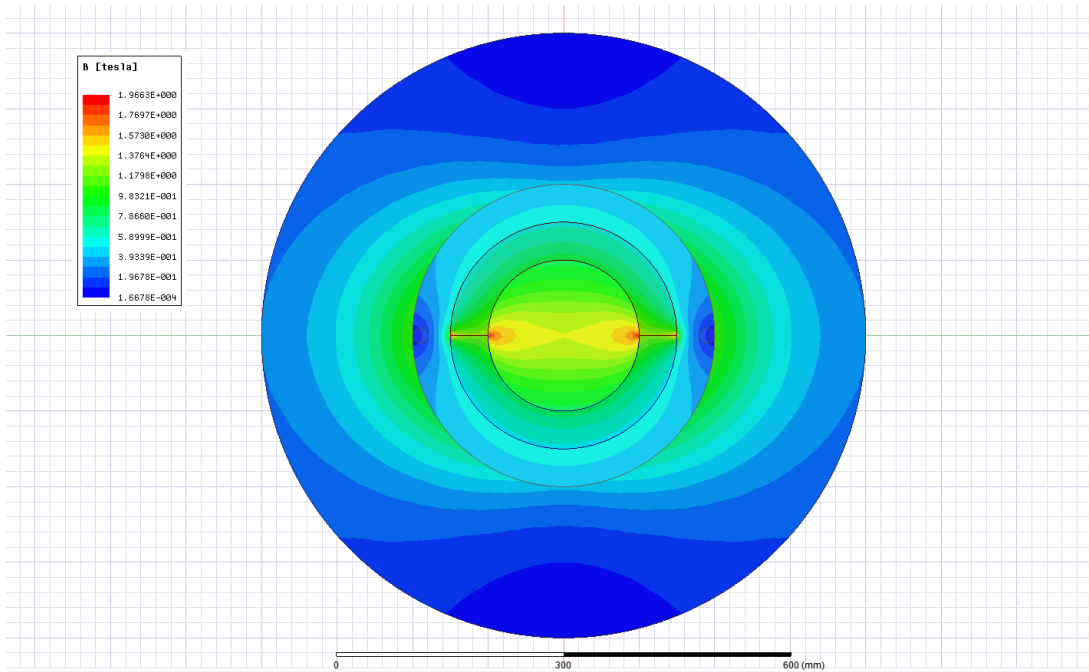


Figure 8: Magnetic Flux Density Magnitude

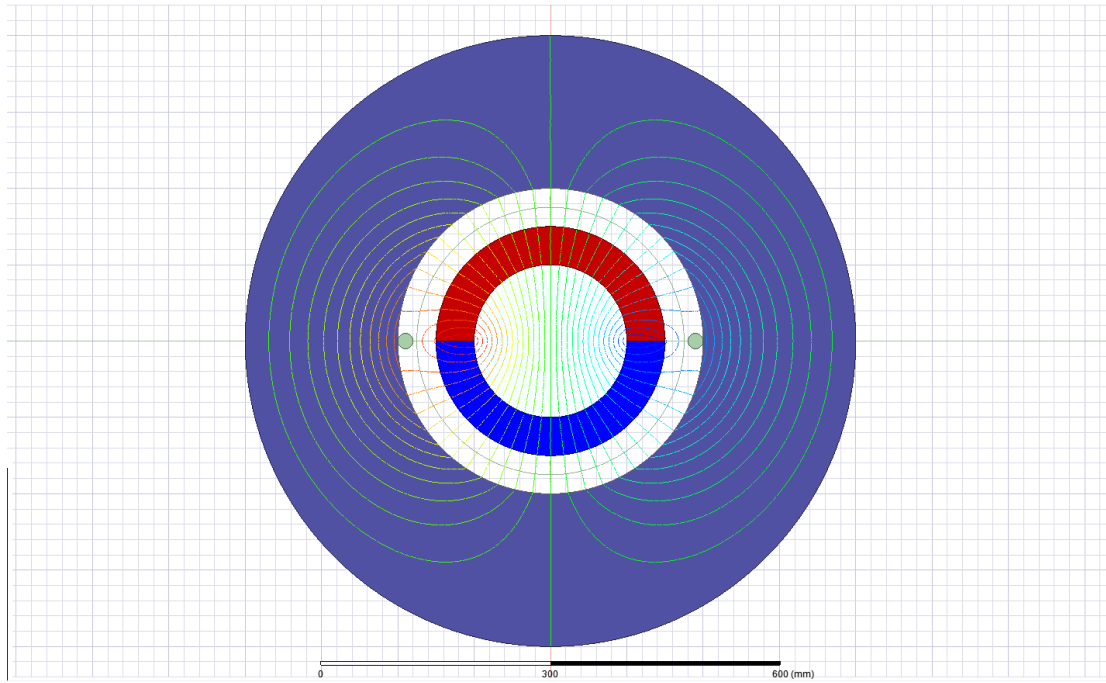


Figure 9: Flux Lines

Radial flux density Distribution:

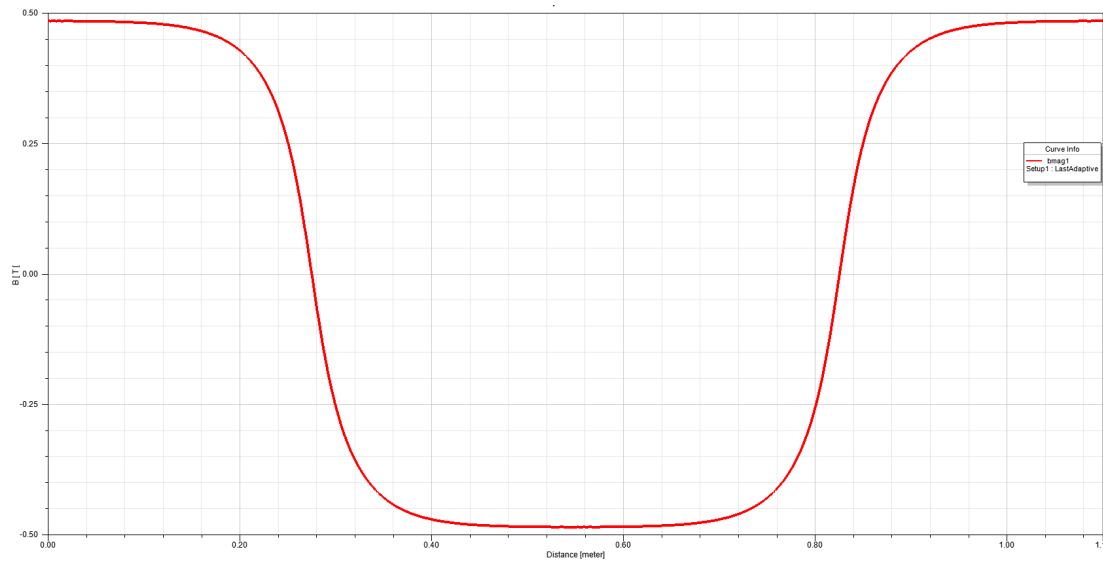


Figure 10: Flux Density Distribution around the air gap

Rotor rotates at 1500 r.p.m(Transient Alaysis-360 degree rotation):

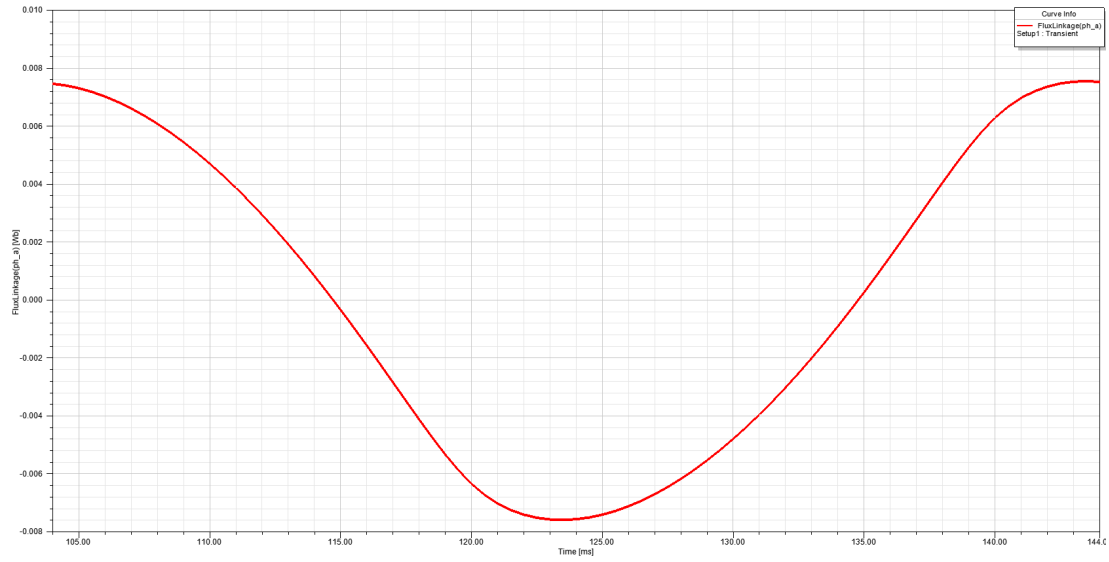


Figure 11: Flux linkage w.r.t time (0 to 360 degree)

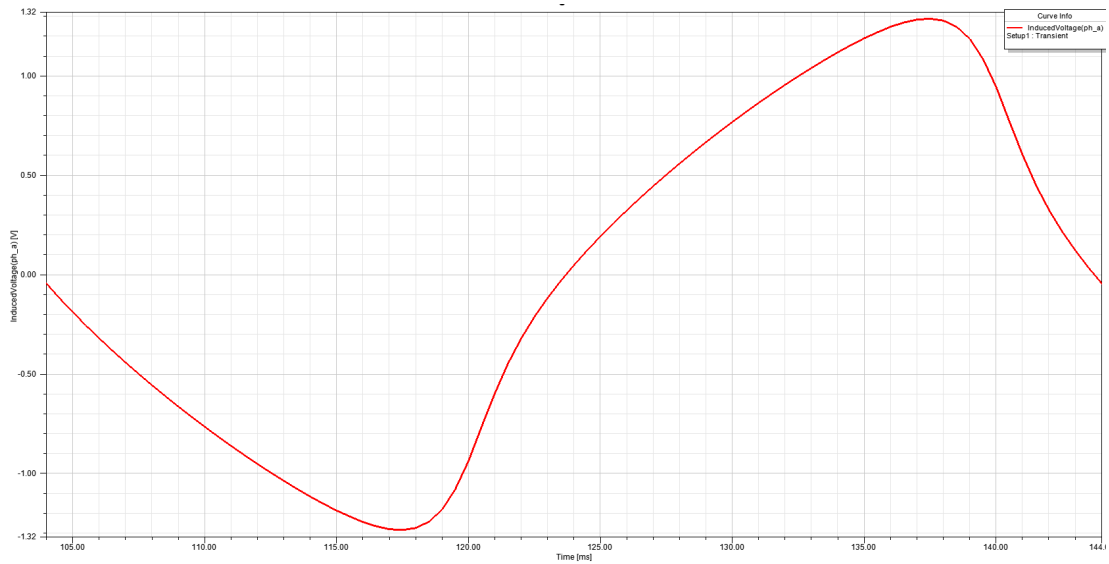


Figure 12: Induced Voltage w.r.t time