MAGNETIC FIELD- LECTURE-19

CHAPTER- 4. MOVINGCHARGE & MAGNETISM

BIOT-SAVERT LAW: It states that the magnetic field due to a current element is proportional to the current (I), the element length (de and inversely proportional to the square of the distance (x). Its direction is perpendicular to the plane containing all and T . According to Bist savert land. Magnetic field due to element (dB) I do I current) (element-length) dl dB h Tai X Smo Where lo = Absolute Permeability dB of free space TOINTA Tella-M Vector Form: dis = llo Idixi Ampere Direction of Magnetic field is given by Right hand Screw rule (x) = crossfield => Direction_ inword the plane. Dot field => Direction Loutward the plane SI unit of Magnetic Induction is Tesla or weber/square metre.

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Note: Magnetia food or Magnetia Car				
Note: Magnetic field or Magnetic field anduction and Magnetic flux density all are some physical quantity. (B)				
Note: Magnétic field or Magnétic field anduction and Magnétic flux density all are some physical quantity. (B)				
= B Ampere-timy/meter				
lo				
APPLICATIONS OF BIOT-SAVERT LAW				
(A) Magnetic field due to Straig	161+ Current corryinpwire			
using B-SLand ; dD = llo Idlenio(1) 47 r ²				
do - llo Idlemo -(1)				
47 72				
ms QMP.				
$tam\phi = \frac{l}{a}$	I ALB			
	1 45 %B			
	0 /			
Transcription of the second se	0/2/			
f 1 = a Sec p Idi				
A60 0+4= 90 4				
0=90-4	2014 031			
8m0= 8m(90-4)= C554	un 1 40 " will min			
	4/ala			
dB = MoI a sec2 & dexcosp	= UOI COSP de			
4T q2 Sec2 \$	YLAKA			

A STATE OF THE STA	manifest the the appendix of the		
Inlegration		.01_	
<u></u>	g both Side with properti	W15-	
11 6 0.4		P ₁	
dB	= <u>UoI</u> <u>Cos</u> p dp	A Second Line of the Line of t	
0			
ØB			
910	= Long Ioul = 100 = 10	[[smd - sm(-B)]	
13 -	LIT COMMANDE	<u>q</u>	
- 13 =	MOI [Smx+Emp]		
21 12 11 11 12	-(1) 5(
Divortion of anomaly Could in			
Direction of Magnetic field is given by Right hand			
Thumb Rule:			
_			
		The state of the s	
	L	A Angel	
(0)	(x)		
((E		Dy 4	
D	(X)	0	
"It states	that when conductor is	I held by	
	en Luch a way that thumb	points in the	
direction	of current then curred	fingers of	
hand inc	licale the direction of	magnetic field?	
1.6.4.1	The contract of the second	7,12,100	

	(M)	+ d)	
Special Cases:	Andrew Commence		
1. When length of wive	is infinite		
and the point lies	away from	d=90°	
both the ends of w	ire.	←a → o β.	
N=B=90		D290	
: B = UoI Lemq	i + 8mgi		
470	in , t 20 - 201 - 2		
B = lloI	Υ_	-A	
279	X X	X=0	
	les n	P	
2. In case of Semi infin		B290	
length of conductor is infinity and			
point lier near one end.			
1 X = 0° & P = 90°	~	(2)	
B= UoI [8m0+8m90]			
2479	the Kalendary		
·· B = loI		(<u>L</u>)2+q2	
489	0	-9/2: N	
3. When length of wire is	frute and Point	A) P	
Lies on perpendicular bisector obvire.			
Sm X =	2 E D 1 E 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	10 1/7	
$\sqrt{\frac{1^2+49^2}{1^2+49^2}}$			
.2			
: B = MoI x 2 8m x = MoI x 2 L 4Ta			
4TA	district in Lit	444	