

- No 19 -
THIS HAS
BEEN SENT?

WORD IN BOX
ALL CAPITAL LETTERS

CAPITAL

No 19

THE VARIATION OF INDUCTANCE

1-12

AND CAPACITANCE WITH RESPECT TO TIME

WE HAVE HERETOFORE ESTABLISHED A
NEW PAIR OF DIMENSIONAL RELATIONSHIPS,
THOSE THE MAGNETIC INDUCTANCE, L , IN
HENRY, AND THE ELECTRO-STATIC CAPACITY, C ,
IN FARAD. DERIVED FROM THESE DIMENSIONAL
RELATIONS IS A PAIR OF ELECTRICAL LAWS,

(I) THE LAW OF DIELECTRIC PROPORTION.

THE RATIO OF THE QUANTITY OF
DIELECTRIC INDUCTION, Ψ , IN COULOMB TO
THE MAGNITUDE OF THE ELECTRO-STATIC
POTENTIAL, C , IN VOLT.

(1) COULOMB PER VOLT,
OR FARAD

(I) THE LAW OF MAGNETIC PROPORTION

THE RATIO OF THE QUANTITY
OF MAGNETIC INDUCTION, Φ ,
IN WEBER, TO THE MAGNITUDE
OF THE M.M.F., I , IN AMPERE

(2) WEBER PER AMPERE,
OR HENRY

THRU ALGEBRAIC RE-ARRANGEMENT
A PAIR OF SECONDARY DIMENSIONAL
RELATIONS ALTERNATLY DEFINE, IN A NEW
FORM, THE TOTAL DIELECTRIC INDUCTION, Ψ ,
IN COULOMB, AND THE TOTAL MAGNETIC
INDUCTION, Φ , IN WEBER. FOR THE
DIELECTRIC INDUCTION,

(3) COULOMB, OR VOLT-FARAD

AND FOR THE MAGNETIC INDUCTION,

(4) WEBER, OR AMPERE-HENRY

HENCE, THE TOTAL DIELECTRIC INDUCTION, Ψ , IN COULOMB, IS THE PRODUCT OF THE POTENTIAL, E , IN VOLT, AND THE CAPACITANCE, C , IN FARAD. LIKEWISE, THE TOTAL MAGNETIC INDUCTION, Φ , IN WEBER, IS THE PRODUCT OF THE M.M.F., i , IN AMPERE, AND THE INDUCTANCE, L , IN HENRY.

$$\Psi \text{ EQUALS } E \text{ TIMES } C$$

$$\Phi \text{ EQUALS } i \text{ TIMES } L$$

IN THE EXPRESSION OF THE VARIATION OF THE PARAMETERS WHICH CONSTITUTE THE DIMENSIONAL RELATIONS INVOLVING CAPACITANCE AND INDUCTANCE, TWO

DISTINCT CONDITIONS CAN EXIST. FIRST IS THE CAPACITANCE AND THE INDUCTANCE ARE TIME INVARIANT, AND THE VARIATION WITH RESPECT TO TIME RESIDES IN THE RELATIONS OF POTENTIAL, e , AND OF M.M.F., i . HERE DERIVED ARE THE SUSCEPTANCE AND THE REACTANCE. IN THE ALTERNATE FORM OF EXPRESSION, IT IS THE POTENTIAL, e , AND THE M.M.F., i , THAT ARE TIME INVARIANT, AND THE VARIATION WITH RESPECT TO TIME RESIDES IN THE RELATIONS OF CAPACITANCE AND INDUCTANCE AS GEOMETRIC CO-EFFICIENTS. GEOMETRY IN TIME VARIATION.

IN GENERAL, TIME INVARIANCE OF L AND C , OR TIME INVARIANCE OF e AND i EACH CAN BE CONSIDERED AS A LIMITING CASE. EACH CAN BE IN VARIATION WITH RESPECT TO TIME AT THEIR OWN INDIVIDUAL TIME RATES. THAT IS, FOR THE DIELECTRIC

BOTH C AND e CAN BE IN VARIATION, AND FOR THE MAGNETIC BOTH L AND i CAN BE IN VARIATION. CONSIDER THE A.C. INDUCTION MOTOR. HERE IS A FORM OF MAGNETIC INDUCTANCE IN WHICH BOTH THE INDUCTANCE, L , AND THE M.M.F., i , ARE IN TIME VARIATION, L WITH THE ROTATIONAL GEOMETRIC VARIATION, AND i WITH THE ROTATIONAL VARIATION OF M.M.F. THE DIFFERENCE BETWEEN THE ROTATIONAL FREQUENCY OF L AND THE ROTATIONAL FREQUENCY OF i IS CALLED THE SLIP FREQUENCY. THE ROTOR CONTINUOUSLY FALLS BEHIND THE ROTATION OF THE MAGNETIC FIELD, DRAGGING ENERGY OUT OF THIS FIELD AND DELIVERING IT TO THE OUTPUT SHAFT OF THE MOTOR.

CONSIDERING THE PAIR OF PRIMARY DIMENSIONAL RELATIONS, IT IS, FOR THE

DIELECTRIC INDUCTION

(5) FARAD PER SECOND, OR
SIEMENS,

AND FOR THE MAGNETIC,

(6) HENRY PER SECOND, OR
OHM

IT IS ESTABLISHED THAT A DISTINCT PAIR OF CONDITIONS EXIST WITH REGARD TO THE VARIATION WITH RESPECT TO TIME. EITHER THE CAPACITANCE OR INDUCTANCE IS IN VARIATION, OR THE POTENTIAL OR M.M.F. IS IN VARIATION, WITH RESPECT TO TIME.

FOR THE CONDITION OF TIME INVARIANT L AND C IT IS GIVEN,

(7) FARAD PER SECOND, OR SIEMENS,
THE SUSCEPTANCE, B ,

(8) HENRY PER SECOND, OR OHM,
THE REACTANCE, X .

IN THE SECOND CASE THE L AND C ARE IN VARIATION WITH RESPECT TO TIME. THE FORCES, i AND e , ARE HELD CONSTANT, OR TIME INVARIANT. HERE THE VARIATION WITH RESPECT TO TIME EXISTS WITH THE METALLIC-DIELECTRIC GEOMETRY ITSELF. THIS HEREBY PRODUCES A VARIATION IN THE GEOMETRIC COEFFICIENTS OF CAPACITANCE OR INDUCTANCE. THESE RELATIONS ARE GIVEN AS,

(9) FARADS PER SECOND, OR SIEMENS,
THE CONDUCTANCE, G

(10) HENRY PER SECOND, OR OHM,
THE RESISTANCE, R

THIS CONDUCTANCE, G , AND THIS
RESISTANCE, R , REPRESENT THE
RELATIONS DERIVED FROM THE TIME
VARIATION OF CAPACITANCE AND FROM THE
TIME VARIATION OF INDUCTANCE, RESPECTIVELY.

IT IS THRU THIS FORM OF PARAMETER
VARIATION THAT THE ENERGY STORED IN
THE ELECTRICAL FIELD BOUNDED BY THE
GEOMETRIC STRUCTURE ~~IS TAKEN OUT~~
IS HERE GIVEN TO AN EXTERNAL FORM.
THIS IS TO SAY, ENERGY IS TAKEN OUT
OF THE ELECTRIC FIELD AND DELIVERED

ELSEWHERE.

FOR A CLOSED SYSTEM, THE ENERGY STORED WITHIN THE ELECTRIC FIELD IS LOST, OR DISSIPATED, FROM THIS SYSTEM. IT IS THEN ENERGY LEAKAGE FROM THE CLOSED SYSTEM.

CONSIDERING THE CONDITION OF A TIME INVARIANT, OR STATIONARY GEOMETRIC STRUCTURE, THIS STRUCTURE EXHIBITING THE DISSIPATION OF THE ENERGY STORED WITHIN THE ELECTRIC FIELD BOUND BY THE STRUCTURE, THE CONDUCTANCE, G , AND THE RESISTANCE, R , ARE THE REPRESENTATIONS OF ENERGY LEAKAGE FROM THE DIELECTRIC AND MAGNETIC FIELDS RESPECTIVELY.

FOR EXAMPLE, CONSIDER ONE " " SPAN OF A J CARRIER OPEN WIRE TRANSMISSION PAIR. HERE THE

CONDUCTANCE, G , IS THE "LEAKAGE CONDUCTANCE" OF THE GLASS TELEPHONE INSULATOR, THE RESISTANCE, R , IS THE "ELECTRONIC RESISTANCE" OF THE COPPER WIRE TELEPHONE WIRE. THESE REPRESENT THE ENERGY DISSIPATION OF ONE SPAN OF LINE.

THIS CONDUCTANCE, G , REPRESENTS A "MOLECULAR LOSS" WITHIN THE GLASS OF THE INSULATOR. THIS RESISTANCE, R , REPRESENTS A "MOLECULAR LOSS" WITHIN THE METAL OF THE WIRE. HENCE IT IS THE MOLECULAR LOSSES OF THE METALLIC-DIELECTRIC GEOMETRY ITSELF THAT GIVES RISE TO AN ENERGY LEAKAGE FROM A CLOSED SYSTEM. THE MOLECULAR AGITATION AND CYCLIC HYSTERESIS EXIST WITHIN THE MOLECULAR DIMENSIONS OF THE PHYSICAL MASS OF THE BOUNDING

GEOMETRIC STRUCTURE. THESE CONSIST OF A MULTITUDE OF MINUTE VARIATIONS OF THE CAPACITANCE AND INDUCTANCE OF THE GEOMETRIC FORM. ON A MICROSCOPIC LEVEL THE MATERIAL SUBSTANCE OF THIS FORM IS INDEFINITE, A KIND OF BLUR IN SPACE, DUE TO THE MULTITUDE OF MINUTE VARIATIONS OF POSITIONS IN SPACE. THESE TINY MOTIONS, HEREBY THRU PARAMETER VARIATION, CONVERT THE ENERGY STORED IN THE ELECTRIC FIELD INTO RANDOM PATTERNS OF RADIATION. BY EXPERIMENT IT CAN BE SHOWN THAT THIS ENERGY LEAKAGE EXISTS IN PROPORTION TO THE TEMPERATURE OF THE MATERIAL FORM STORING ENERGY WITHIN ITS BOUND ELECTRIC FIELD. IN GENERAL, THE ELECTRO-STATIC POTENTIAL, e , IN VOLT, RENDERS THE INSULATORS HOT, THE MAGNETO-MOTIVE

FORCE, i , IN AMPERE, RENDERS THE WIRES HOT. ALSO, IT IS FOUND THAT THIS HEATING INCREASES WITH INCREASING FREQUENCY OF THE POTENTIAL, C , OR THE M.M.F., i . IT IS HERE WHERE THE PREVAILING CONCEPT OF THE "ELECTRON" IS TO BE FOUND. HENCE IT IS THE MOTIONS OF THE ELECTRONS THAT GIVE RISE TO THE ENERGY LOSS IN AN ELECTRICAL SYSTEM.

ELECTRONS REPRESENT ENERGY DISSIPATION. HOWEVER, THE PEDANT, THE MYSTIC, AND THE DIS-INFORMER ALL TELL US THAT THE ELECTRON IS WHAT CONVEYS ENERGY, THE COMPLETE OPPOSITE !

BREAK - MORE TO FOLLOW
DE NGKPH.

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