Monopole positioning in closed space, trefoil conversion & energy calculation.

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Magnetic monopole is a hypothetical particle with a single pole. In this paper a new mathematical structure for Dirac string has been proposed .Quantitative aspects and qualitative aspects of a monopole represented as a Dirac string have been highlighted. Magnetic bundle has been defined in a complex form and pole has been defined as composition of that bundle for single pole the pole variable is single. The pole can be considered as a group of threads or a point lying on a monopole magnet bundle for one pole the thread is single and one dimensional. The function is in complex form and defines magnetic bundle.

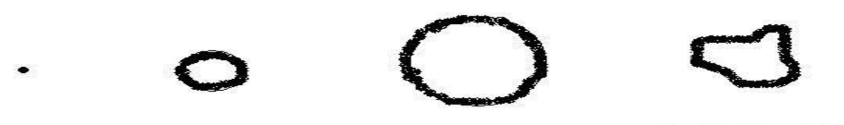
Let $(X \to Y)Rn + 1$ be a bijection of the pole of a Magnetic bundle $F_x G_x H_x \left[\begin{Bmatrix} Ti \\ Si \\ Ri \end{Bmatrix}\right] + \begin{pmatrix} P! & \cdots & P2! \\ \vdots & \ddots & \vdots \\ P3! & \cdots & P4! \end{pmatrix}$

Then for a monopole we arbitrary define that its function will only contain one pole term or factorial present in sparse matrix.(the bijection relates pole to the factorials present in matrix) And mapping suggests the monopole existing is single dimensional for better manipulation and understanding of its structure we declare it a string (an oscillating closed strand of energy) .Dirac strings is also an approach towards understanding the monopoles and defining them but here the Dirac string has been defined as a whole new concept.

We define the Dirac string in a space (R^4), its locality, its field behavior, Function representing it, the possible orientation by applying topological knots .Some control policies for getting suitable results have been induced by a scalar product representation. The control policies are defined as matrix of the conditions which need to be induced in order to obtain proper results.

Magnetic monopole has a single pole therefore will have single variable representing it and one dimensional string will also contain one point only .String is a stretched out point which has been extended by inducing a stretching factor. The stretched point after the increment is induced by an $Os.F_{(X)}$ This complex function induces and oscillation factor in the nested sets of the stretched point and they randomly try to disintegrate but the glue keeps them bonded.

The representation of the point stretching has been represented in (fig 1:1). The stretched point has distorted interference like patterns. This characteristic has been represented as when the stretching is induced the composing information is disturbed which was compactified as a result the information has been blurred representing the disturbance in the given surgery.



Dirac string in a closed space (sphere)

For any object to lie in a spacer it needs to satisfy its criterion for sphere in the case its general equation needs to be satisfied, for the object to lie in the sphere. The general equation of the sphere being (1.1)

$$x^2 + y^2 + z^2 + 2gx + 2fy + 2hz + c + d = 0$$

As the Dirac string is a single dimensional object for it to lie it needs to satisfy other two coordinates too. The other two coordinates can be satisfied by inducing a control policy to obtain desired results. The control policy is in form of a determinant which on being induced method of induction being scalar product yields the results acceptable and desired. As in the given case only the term involving "x" are satisfied for satisfying other terms .The conditions are defined (1.2)—&& --(1.3)

$$y^2 + z^2 + 2fy + 2hz = 0$$

The second condition being (1.3)-

$$\{z, y\}\mathcal{E}Ds \circ$$

Therefore control policy matrix induced (1.4)-

$$\begin{pmatrix} (1.2) & 1 \\ 1 & (1.3) \end{pmatrix} = \prod(c)$$

The notation $\prod(c)$ is not to considered co product notation it represents the control matrix.

Therefore the induced matrix will control the equation (1.1)- and yield the required result ie: satisfaction of the sphere general equation. The final induction can be represented by (1.5)-

$$(x^2 + y^2 + z^2 + 2gx + 2fy + 2hz + c + d).\prod(c) = 0$$

The string function for the Dirac string is defined as –(1.5)-

$$Ds: X \to y \left\{ \prod_{(c)}^{x^2} \boldsymbol{\varphi i = s_x \Delta; where\ \Delta\ is\ fluctuationfactor}. \right.$$

The connector of the responsible factors for any change in a Dirac string is defined as $\boldsymbol{\varphi i}$

(*this connector associates and define a function using the factors which developed the conditions for Dirac string)

The connector can be visualized as a thread which binds the affecting factor and form a function representing Dirac string. The connecting thread can be defined as locality of the Dirac string.

Notified as (1.6)-

$$\boldsymbol{1 * \dot{1}\varphi\iota}$$

Integral for the following string is defined over $\mathbb{R}^4$ for the sphere.(2.1)-

$$\Delta \int_{\mathbb{R}^4} S_{(X)}$$

Orientation change of a Dirac string and Net field calculation using knot generators.

Theorem- The knot group of k is generated by the elements $x_1 \ldots\ldots\ldots x_n$ subject to relations $r_1 \ldots\ldots\ldots\ldots\ldots r_{n-1}$.

The trefoil knot –we have three generators$x_2 = x_1x_3, x_3x_2 = x_1x_2$ on eliminating x_3 we get (2.2)-

$$a = x_1 \ , b = x_2$$

Then the group is defined as(2.2)-

$$G = \{ab \mid aba = bab\}$$

A to (12) , b to(23)

↕HOMOMORPHISM

From G to symmetric group on three letters.

(12)(23)(12)=(13)=(23)(12)(23)

HOMOMORPHISM onto (12) and (23)-generates symmetric group $\mathbb{S}_3$.This shows that $\mathbb{G}$ cannot be an albenian group; Therefore trefoil is not trivial

Thus, trefoil is knotted.

The generators for a normal trefoil Dirac string are directly related to (1.5)-(2.3)--

$x_1 \sim S_{(X)}$; $x_2 \sim S_{(X)}$; $x_3 \sim S_{(X)}$

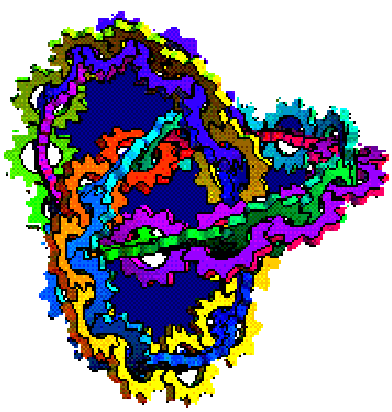
Thus, generators of the trefoil Dirac string (2.4),(2.5),(2.6)-

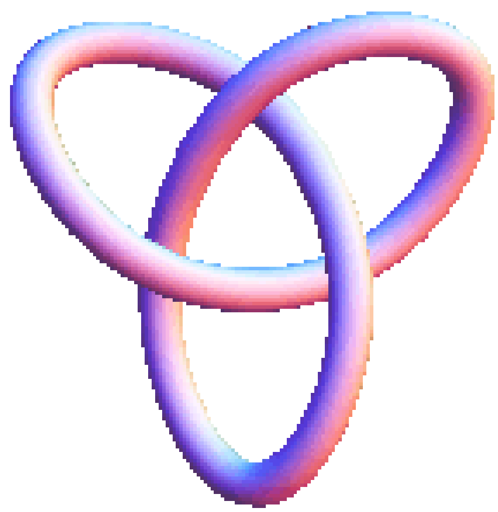
$$x_1 = R\Delta S_{(X)}$$

$$x_2 = R_2\Delta\, S_{(X)}$$

$$x_3 = R_3\Delta S_{(X)}$$

The field of the trefoil Dirac string can be defined as R, R_2, R_3.Thus the field strength depends on the part of the string localized, This causes variation in value of R which is the modulus of field.





***THE COLORED REGIONS REPRESENT RESPECTIVE FIELD EXERTED BY THE PART OF STRING,THE NETTED PART REPRESENTS UNION OF ALL THE FIELDS IE; £. (using web resource mathematica)**
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Therefore net field-(3.1) $\pounds = +\frac{1}{Ds:X\to y\begin{cases}x^2\\ \prod(c)\end{cases}\boldsymbol{\varphi i}}[x_1 + x_2 + x_3]$

For monopole – the Gauss law is violated thus (3.2) becomes (3.3)-

$\oint b.\overrightarrow{ds}=0 \leftrightarrow \oint b.\overrightarrow{ds}\neq 0$

Thus, (3.4) is declared-

$$\pounds = +\frac{1}{Ds: X \to y\begin{cases}x^2\\ \prod(c)\end{cases}\boldsymbol{\varphi i}}[x_1 + x_2 + x_3] = (3.3)$$

Therefore the magnetic field of a Dirac string is given by the final equation (3.5)-

$$\int_{\mathbb{R}^4} \pounds = \int + \frac{1}{Ds: X \to y\begin{cases}x^2\\ \prod(c)\end{cases}\boldsymbol{\varphi i}}[x_1 + x_2 + x_3]$$

$$x_1 = R\Delta S_{(X)}$$

$$x_2 = R_2\Delta\, S_{(X)}$$

$$x_3 = R_3\Delta S_{(X)}$$

The existence and positioning of a Dirac string in a closed surface has also been calculated, The Dirac string can be represented in trefoil form and the fields of the region specific of the string are given by Where R, R_2, R_3 represent the field. The total energy of the Dirac string has also been calculated. Therefore further consequences such as mass calculation, particle monopole interactions can be further evaluated.

REFERENCES-

(1)Basic topology by MA Armstrong: Knots and covering spaces;

(2) Weinstein, Eric W. "Trefoil Knot." From Math World--A Wolfram Web Resource. http://mathworld.wolfram.com/TrefoilKnot.html