Explaining the existence of $\mathbb{R}^3$ functions on $\mathbb{R}^2$ plane

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1 Introduction

In this article we trying to describe the exsistents and the movment of a wave, or better say a function, on a plain, where the movment of the function is based on a order which can be explained when we are tracing its path based on a higher-dimensional plain. Let we have a plain which we call it as BP, where the movments on this plain is $\mathbb{R}^3$; then we have a function which is set in the BP plain, which we call at as f(x). Let the f(x) only has one range point, which is equal for all of the directions, let that point be A, which has a address on BP. By this explanation we can say that the function will form a shape inside the plain BP. The function is changing by another function name G(x), then it became G(f(x)), when we visualize the function on the plain, we can see that the shape is moving, and by analyzing the movment of the object we can analyze the G(x).

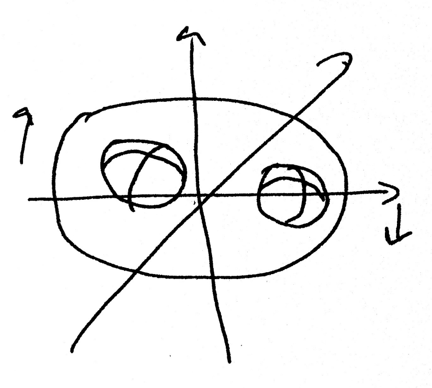

Figure 1: Two waves seting on the BP, which the right wave is faceing throw up, and the left wave is faceing throw down, where these two waves can not be explnad by the flat two-dimensional base plan BP.

For explnaing this phenomenon, we need to explnaing the waves on this plain by representing the waves are setting and exsests on another plan which has a relation to the BP, by an angle, direction throw the BP. The visualization of this method for this example is the figure 2.

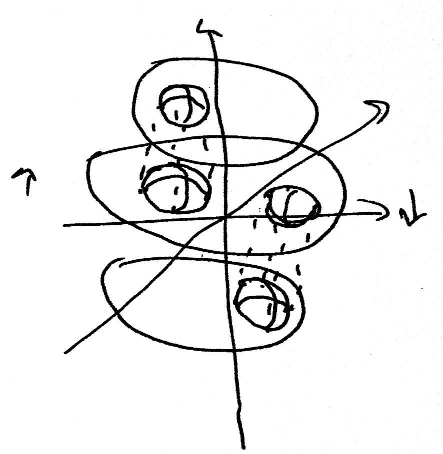

Figure 2: Two waves seting on the BP, which the right wave is faceing throw up, and the left wave is faceing throw down, where these two waves can not be explnad by the flat two-dimensional base plan BP.

Following of this paper is the method, and my proof of this visulaztion.

2 Description of the plane

The plane is the surface which the wave function exsets on it, all planes are exsets in a space which they are floting in it, and we can only can describe the angels, and the directions of each plane in this space by using another plane. In this paper we allways have one plane which we call it as the Base-Plane, BP, which is the plane all of the shapes will be take a place on it and all sub-planes are described by the directions which they have to the BP. Each plane carring a list of points on them, which the function will be described by these points.For this problem which we have I'll describe the planes as the following:

$$\mathrm{P} = (\sum_{r_P=a_P}^{b_P} r_P)(\sum_{t_P=c_P}^{d_P} t_P)$$

$$\text{Where } \{P \in \mathbb{R}^2 | a_P, b_P, c_P, d_P \in \mathbb{Z} | a_P, c_P \lll b_P, d_P\}$$

By this explnation we can understand that BP is a flat plane, where it is created by the multiplication of two series of natural numbers.

3 Smooth carve function

In this section the meaning of the wave, and the function will be explaned, and also the equation which is explane this function. For the explnation of the waves on the plane, we use the meaning of function, and this function is a function where the function runs based on a symmetric relation; by using this aprouch we can explane the function by explaning its symmetry and also the process of its creation. Let we have a number line which is the plane, and we have three points, where we choose one point α, and two other points are $\alpha - 1$, and $\alpha + 1$, where the function is between these two points and α is the maximum point, which is in the middle of these two points.

By the fact that the maximum point is α, and it is in the middle of the line, then it is the symmetric point, and the function is runs based on this symmetry, and we can see that the symmetry is the maximum between each two point, between the function domain.

The following equation explanes the points between two points $\alpha - 1$, $\alpha + 1$:

$$P_n = A_{\alpha-1} + \sum_{f=0}^{n-2} \frac{A_{\alpha+1}}{2^{n-f}}$$

From this equation we can get to the following equation which is the equation of the line, we do this insted of using a typical f(x) equation becuase we will not have any other plane for the x axis, but we can describe it as a vector line with cervuter.

$$\overline{L} = A_{\alpha-1} + \sum_{f=0}^{n-2} \frac{A_{\alpha+1}}{2^{n-f}}$$

$$\overline{L} = \begin{bmatrix} 0 \\ A_\alpha - 1 \end{bmatrix} + (\sum_{f=0}^{\infty} \begin{bmatrix} S - f \\ \frac{A_{\alpha+1}}{2^{n-f}} \end{bmatrix}) + \begin{bmatrix} 0 \\ A_\alpha + 1 \end{bmatrix}$$

S is the maximum point for the function, which the change that we make by the number S, represent the $\mathbf{R}^{+}1$ for the function. In this paper we assume that we have a $\mathbf{R}^2$ planes, and we have $\mathbf{R}^2 + 1$ waves, $\overline{L}$ equation explanes the function when it is a $\mathbf{R}^1 + 1$ function; So for creating the $\mathbf{R}^2 + 1$ function we multiplie the $\overline{L}$ equation by it self, where we get the equation $\overline{S} = \overline{L} * \overline{L}$.

$$\overline{S} = (\begin{bmatrix} 0 \\ A_\alpha - 1 \end{bmatrix} + (\sum_{f=0}^{\infty} \begin{bmatrix} S - f \\ \frac{A_{\alpha+1}}{2^{n-f}} \end{bmatrix}) + \begin{bmatrix} 0 \\ A_\alpha + 1 \end{bmatrix})(\begin{bmatrix} 0 \\ A_\alpha - 1 \end{bmatrix} + (\sum_{f=0}^{\infty} \begin{bmatrix} S - f \\ \frac{A_{\alpha+1}}{2^{n-f}} \end{bmatrix}) + \begin{bmatrix} 0 \\ A_\alpha + 1 \end{bmatrix})$$

$$= (\begin{bmatrix} 0 \\ A_\alpha - 1 \end{bmatrix})^2 + (\sum_{f=0}^{\infty} 2(\begin{bmatrix} 0 \\ A_\alpha - 1 \end{bmatrix} \begin{bmatrix} S - f \\ \frac{A_{\alpha+1}}{2^{n-f}} \end{bmatrix})) + 2(\begin{bmatrix} 0 \\ A_\alpha - 1 \end{bmatrix}$$

$$\begin{bmatrix} 0 \\ A_\alpha + 1 \end{bmatrix}) + (\sum_{f=0}^{\infty} \begin{bmatrix} S - f \\ \frac{A_{\alpha+1}}{2^{n-f}} \end{bmatrix})^2 + (\sum_{f=0}^{\infty} 2(\begin{bmatrix} 0 \\ A_\alpha + 1 \end{bmatrix} \begin{bmatrix} S - f \\ \frac{A_{\alpha+1}}{2^{n-f}} \end{bmatrix})) + (\begin{bmatrix} 0 \\ A_\alpha + 1 \end{bmatrix})^2$$

4 The relations of sub-planes to the BP

We have one know point on each plane, which we call it as α, and using this we have two other points $\alpha - 1$ and $\alpha + 1$. We also have these three points on sub-planes too, which we call theme as $\alpha - 1'$, α' and $\alpha + 1'$. As it mentioend in the priveus section we can calculate and create the wave using the equation $\overline{S}$, which is using the three points of α. Now we want to create a $\mathbb{R}^2$ area on each plane by change the $\overline{S}$ equation as the following:

$$\overline{S} = (A_\alpha - 1)^2 + (\sum_{f=0}^{\infty} 2((\frac{A_{\alpha+1}}{2^{n-f}}))) + 2((A_\alpha - 1)$$

$$(A_\alpha + 1)) + (\sum_{f=0}^{\infty} \frac{A_{\alpha+1}}{2^n - f})^2 + (\sum_{f=0}^{\infty} 2((A_\alpha + 1)(\frac{A_{\alpha+1}}{2^{n-f}}))) + (A_\alpha + 1)^2$$

As we know that $\overline{S}$ is the area of the function, and we call it as AS. Then we say that the connection of the two planes are AS * H, where H is a line which has a value of 2S, and this shape is a $\mathbb{R}^3$ which is the connection of AS to AS'.

5 The equation for all possible symmetries

The equation that we have now for the $\overline{S}$ is for only one symmetry which is based on 2^n on the plane, and its relation to the S point from the H line. For creating a general equation for using deferent symmetries for the function we need one equation for the S point, and one equation for the point on the plane, then we get the following equation:

$$\overline{L} = \sum_{f=0}^{\infty} \begin{bmatrix} \xi(S, f) \\ \vartheta(A_a + 1, f) \end{bmatrix}$$

where the function $\xi(S, f)$ is a equation for the locateing the point S related to the point on the plane; And the function $\vartheta(A_a + 1, f)$ is for the symmetry of the point on the plane. By using these two functions we can have many deferent symmetries for the function.

6 One example of connection of two functions and creating one membering

Let we have function

$$\overline{L_1} = \sum_{f=0}^{\infty} \begin{bmatrix} S - f \\ \frac{A_a + 1}{(2^n - f) + \sqrt{f+1}} \end{bmatrix}$$

and function

$$\overline{L_2} = \sum_{f=0}^{\infty} \left[\frac{\frac{S}{f+1}}{\frac{A_a+1}{2^f}} \right]$$

Then we create the sub-plane relation for each function as following,

$$\overline{S_1} = h(\sum_{f=0}^{\infty} \left[\frac{S-f}{\frac{A_a+1}{(2^n-f)+\sqrt{f+1}}} \right])^2$$

,

$$\overline{S_2} = h(\sum_{f=0}^{\infty} \left[\frac{\frac{S}{f+1}}{\frac{A_a+1}{2^f}} \right])^2$$

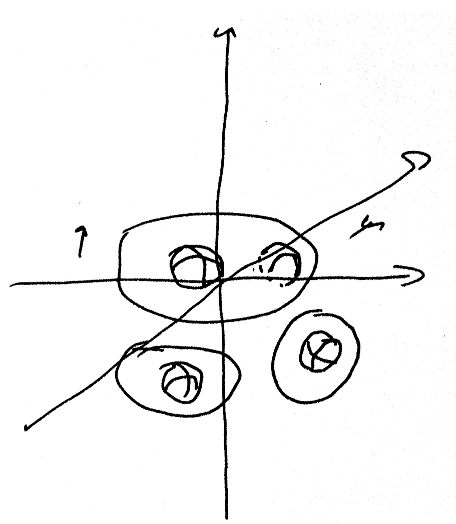

Figure 3: The graphic vitulaztion of the two functions and the sub-planes for $\overline{S_1} and \overline{S_2}$.

The connection that we want to create is a look like a tonel from $\overline{S_1}$ to $\overline{S_2}$, where we see the function $\overline{S_1}$ moves trow the function $\overline{S_2}$ and during this travel, the function changes by one base function, which as much the function gets closer to the final function, the travel function gets more similar to the final function; This travel of the function looks like the figure 4.

For represnting this we create one relation named $\bar{\bar{\bar{R}}}$, where the $\bar{\bar{\bar{R}}}$ relation is as following:

$$\bar{\bar{\bar{R}}} = \Phi(S_1 \to S_2) h(S_1 * G)$$

where the varible G is the following:

$$G = \frac{\overline{S_2} - \overline{S_1}}{n}$$

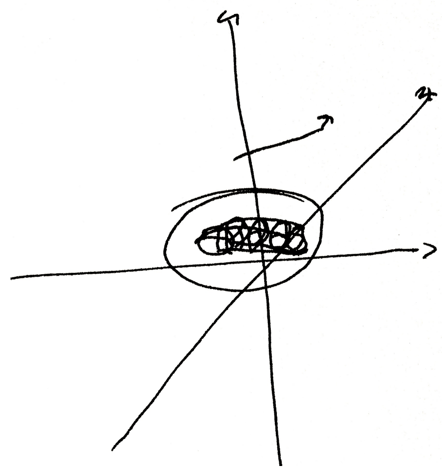

Figure 4: The graphic vitulaztion of the two functions and the sub-planes for $\overline{S_1} and \overline{S_2}$.

where the subtraction of two functions is the deferents of these two function's symmetry. And whene we devide it by n, we want to create the smallest unit of the change in deferents.

The symbol Φ is the represntion of the sum of the relation $h(S_1 * G)$. This relation creates a shape where is the transfer link between these two functions, and it is a represntion of the relation of the plane to the functions.