Nokton theory

version 2.0

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Abstract

The nokton theory is an attempt to construct a theory adapted to every physical phenomenon. Space and time have been discretized. Its laws are iterative and precise. Probability plays an important role here.

At first I defined the notion of image function and its mathematical framework. The notion of nokton and its state are the basis of several definitions. I later defined the canonical image function and the canonical contribution.

Two constants have been necessary to define the dynamics of this theory. With its combinatorial complexity, the theory has at present given no result which seems to me interesting. The document is only a foundation.

Among the merits of this theory the absence of the infinites and its interpretation that is contrary to the quantum mechanics or the general relativity does not strike the common sense of the physicist.

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1 Introduction

Physical theories that seem to be contradictory describe the same nature. For a physicist it is an indication that there is a deeper physical theory. The most established theories, quantum mechanics and general relativity, suffer from what I call the disease of infinity. Indeed high energy infinites on both sides appear and the calculations no longer hold. The tracking of the origin leads us to suppose a discrete space and iterative laws where the moments succeed one another. In this context it is no longer possible for infinity to appear. If the movements are governed by probabilities then the calculation can only be done on a statistical basis. Nature fixes the following motion, to us to predict with what probability.

2 Image function

2.1 Preliminaries

Definition 1. A window is an element of the set $\mathbb{N}^* \times \mathbb{N}^*$.

Definition 2. We note V the subset of $K = \mathbb{Q}^6$ such as the sum of the terms of an element is less than or equal to 1.

Definition 3. Let the set $\Delta = \{\Delta_{-x}, \Delta_{+x}, \Delta_{-y}, \Delta_{+y}, \Delta_{-z}, \Delta_{+z}, \Delta_0\}$ such as $\Delta_{-x} = (-1,0,0)$, $\Delta_{+x} = (1,0,0)$, $\Delta_{-y} = (0,-1,0)$, $\Delta_{+y} = (0,1,0)$, $\Delta_{-z} = (0,0,-1)$, $\Delta_{+z} = (0,0,1)$ and $\Delta_0 = (0,0,0)$. Δ_{-x}, Δ_{+x}, Δ_{-y}, Δ_{+y}, Δ_{-z} , Δ_{+z} and Δ_0 are elements of $\mathbb{Z}^3$. An element of the set Δ is called displacement.

Definition 4. A status is couple of the set $S = V \times \Delta$.

Definition 5. For $n \in \mathbb{N}^*$, let E a set, e an element of E^n et $1 \leq i \leq n$. We note $[1,e]_E = e$ and $\forall\ 2 \leq i \leq n$ $[i,e]_{E^n}$ is the i-th term of e.

Definition 6. For $m \in \mathbb{N}^*$ et $n \in \mathbb{N}^*$, let E a set, e an element of $(E^m)^n$, $1 \leq i \leq m$ and $1 \leq j \leq n$. We note $[i,j,e]_{(E^m)^n} = [i,[j,e]_{(E^m)^n}]_{E^m}$.

Definition 7. For $m \in \mathbb{N}^*$ et $n \in \mathbb{N}^*$, let E a set and e an element of $(E^m)^n$. We note e^* the element of $(E^n)^m$ such as $\forall\ 1 \leq i \leq m$, $\forall\ 1 \leq j \leq n$ $[j,i,e]_{(E^n)^m} = [i,j,e]_{(E^m)^n}$.

Definition 8. The function probability of displacement ρ is the function defined as follows :

$$\begin{aligned} \rho : S &\rightarrow \mathbb{Q} \\ (v,\delta) &\rightarrow \begin{cases} [1,v]_V & \text{if } \delta = \Delta_{-x} \\ [2,v]_V & \text{if } \delta = \Delta_{+x} \\ [3,v]_V & \text{if } \delta = \Delta_{-y} \\ [4,v]_V & \text{if } \delta = \Delta_{+y} \\ [5,v]_V & \text{if } \delta = \Delta_{-z} \\ [6,v]_V & \text{if } \delta = \Delta_{+z} \\ 1 - \sum_{i=1}^{6} [i,v]_V & \text{otherwise} \end{cases} \end{aligned}$$

Proposition 1. *If v an element of* V, then

$$\sum_{\delta \in \Delta} \rho((v,\delta)) = 1 \tag{1}$$

Proof.

$$\begin{aligned} \sum_{\delta \in \Delta} \rho((v,\delta)) &= \rho((v,\Delta_{-x})) + \rho((v,\Delta_{+x})) + \\ & \rho((v,\Delta_{-y})) + \rho((v,\Delta_{+y})) + \\ & \rho((v,\Delta_{-z})) + \rho((v,\Delta_{+z})) + \\ & \rho((v,\Delta_0)) \\ &= [1,v]_V + [2,v]_V + [3,v]_V + [4,v]_V + v[5,v]_V + [6,v]_V + 1 - \sum_{i=1}^{6} [i,v]_V \\ &= 1 \end{aligned}$$

□

Definition 9.

- For $N \in \mathbb{N}^*$, a pulse of width N is an element of the set V^N.
- For a window *(T,N)*, a pulse of width *(T,N)* is an element of the set $V_{T,N} = (V^T)^N$.
- For a window *(T,N)*, a path of width *(T,N)* is an element of the set $\Omega_{T,N} = (\Delta^T)^N$.

2.2 Image function

Definition 10. For a window *(T,N)*, an image function of width *(T,N)* is a function from $\Omega_{T,N}$ to $V_{T,N}$.

Definition 11. For a window *(T,N)*, let f a image function of width *(T,N)*. The probability function of f noted p_f is the function defined as follows :

$$\begin{array}{rcl} p_f : \Omega_{T,N} & \rightarrow & \mathbb{Q} \\ \Omega & \rightarrow & \prod_{i=1}^{N} \prod_{t=1}^{T} \rho(([t,i,f(\Omega)]_{V_{T,N}}, [t,i,\Omega]_{C_{T,N}})) \end{array}$$

Proposition 2. *If $n \in \mathbb{N}^*$, E a set and $(g_i)_{1 \leq i \leq n}$ a family of functions from E to $\mathbb{Q}$ such as $\forall$ $1 \leq i \leq n$ $\sum_{e \in E} g_i(e) = 1$ then*

$$\sum_{x \in E^n} \prod_{i=1}^{n} g_i([i,x]_{E^n}) = 1 \tag{2}$$

Proof.
For $n = 1$

$$\begin{array}{rcl} \sum_{x \in E} \prod_{i=1}^{1} g_i([i,x]_E) & = & \sum_{x \in E} g_1([1,x]_E) \\ & = & \sum_{x \in E} g_1(x) \\ & = & 1 \end{array}$$

For $n \geq 1$, we define the operator $|$ which for an element $y \in E^n$ and $z \in E$, gives the element $x \in E^{n+1}$ result of the concatenation at right of elements y and z.

$$\begin{array}{rcl} \sum_{x \in E^{n+1}} \prod_{i=1}^{n+1} g_i([i,x]_{E^{n+1}}) & = & \sum_{y|z \in E^{n+1}} \prod_{i=1}^{n+1} g_i([i,y|z]_{E^{n+1}}) \\ & = & \sum_{y \in E^n} \sum_{z \in E} \prod_{i=1}^{n+1} g_i([i,y|z]_{E^{n+1}}) \\ & = & \sum_{z \in E} \sum_{y \in E^n} \prod_{i=1}^{n+1} g_i([i,y|z]_{E^{n+1}}) \\ & = & \sum_{z \in E} \sum_{y \in E^n} g_{n+1}([n+1,y|z]_{E^{n+1}}) \prod_{i=1}^{n} g_i([i,y|z]_{E^{n+1}}) \\ & = & \sum_{z \in E} \sum_{y \in E^n} g_{n+1}([1,z]_E) \prod_{i=1}^{n} g_i([i,y]_{E^n}) \\ & = & \sum_{z \in E} g_{n+1}([1,z]_E) \sum_{y \in E^n} \prod_{i=1}^{n} g_i([i,y]_{E^n}) \\ & = & \sum_{z \in E} g_{n+1}([1,z]_E) \\ & = & \sum_{z \in E} g_{n+1}(z) \\ & = & 1 \end{array}$$

□

Proposition 3. *For a window* (T,N)*, if* f *a image function of width* (T,N) and p_f *the probability function of* f *then*

$$\sum_{\Omega\in\Omega_{T,N}} p_f(\Omega) = 1 \tag{3}$$

Proof. Let $\Omega \in \Omega_{T,N}$. According to 1 $\forall\ 1 \leq i \leq N$, $\forall\ 1 \leq t \leq T$ $\sum_{\delta\in\Delta} \rho(([t,i,f(\Omega)]_{V_{T,N}},\delta)) = 1$ using 2 we deduce that

$\sum_{i=1}^{N}\prod_{t=1}^{T}\rho(([t,i,f(\Omega)]_{V_{T,N}},[t,i,\Omega]_{C_{T,N}})) = 1$ and

$\sum_{\Omega\in\Omega_{T,N}}\prod_{i=1}^{N}\prod_{t=1}^{T}\rho(([t,i,f(\Omega)]_{V_{T,N}},[t,i,\Omega]_{C_{T,N}})) = 1$

so $\sum_{\Omega\in\Omega_{T,N}} p_f(\Omega) = 1$. □

Definition 12. For a window *(T,N)*, let $1 \leq t \leq T$ *and* $(\Omega,\Omega') \in \Omega^2_{T,N}$ checking $\forall\ 1 \leq i \leq N$, $\forall\ 1 \leq j \leq t$ $[j,i,\Omega]_{C_{T,N}} = [j,i,\Omega']_{C_{T,N}}$. f is a causal image function [1] of width *(T,N)* if f is an image function of width *(T,N)* such as $\forall\ 1 \leq i \leq N$, $\forall\ 1 \leq j \leq t$ $[j,i,f(\Omega)]_{V_{T,N}} = [j,i,f(\Omega')]_{V_{T,N}}$.

Definition 13. For a window *(T,N)*, let v a pulse of width N, E a non empty set and k a function from $\Omega_{T,N}$ to $(E^T)^N$. f_E is a natural image function [2] of v over width *(T,N)* if f_E a causal image function of width *(T,N)* as if $\exists e \in E$ checking $\forall\ \Omega \in \Omega_{T,N}$, $\forall\ 1 \leq i \leq N$ and $\forall\ 2 \leq t \leq T$ if $[t,i,k(\Omega)]_{(E^T)^N} = e$ then $[t,i,f_E(\Omega)]_{V_{T,N}} = [t-1,i,f_E(\Omega)]_{V_{T,N}}$.

Definition 14. For a window *(T,N)*, let f and f' two image functions of width *(T,N)*. f and f' are symmetric if $\exists\mu$ a permutation of $\Omega_{T,N}$ such as $\forall\ \Omega \in \Omega_{T,N}$ $p_f(\Omega) = p_{f'}(\mu(\Omega))$.

3 Image function with canonical contribution

3.1 Canonical image function

Definition 15. For a window *(T,N)*, let $1 \leq t \leq T$, $(\Omega,\Omega') \in \Omega^2_{T,N}$ checking $\forall\ 1 \leq i \leq N$, $\forall\ 1 \leq j \leq t$ $[j,i,\Omega]_{C_{T,N}} = [j,i,\Omega']_{C_{T,N}}$ and k a function from $\Omega_{T,N}$ to $K_{T,N} = (K^T)^N$. k is a contribution of width *(T,N)* if $\forall\ 1 \leq i \leq N$, $\forall\ 1 \leq j \leq t$ $[j,i,k(\Omega)]_{K_{T,N}} = [j,i,k(\Omega')]_{K_{T,N}}$.

Definition 16. For a window *(T,N)*, let v a pulse of width N and k a contribution of width *(T,N)*. ω is the function from $\Omega_{T,N}$ to $K_{T,N}$ such as $\forall\ \Omega \in \Omega_{T,N}$, $\forall\ 1 \leq i \leq N$:

- $[1,i,\omega(\Omega)]_{K_{T,N}} = [i,v]_{V^N}$.
- $\forall\ 2 \leq t \leq T$, $[t,i,\omega(\Omega)]_{K_{T,N}} = \frac{1}{1+\sum_{j=1}^{6}[j,[t-1,i,k(\Omega)]_{K_{T,N}}]_K}.([t-1,i,\omega(\Omega)]_{K_{T,N}}+[t-1,i,k(\Omega)]_{K_{T,N}})$.

Proposition 4. *ω is an image function.*

Proof.

For $t = 1$, $\sum_{j=1}^{6}[j,[1,i,\omega(\Omega)]_{K_{T,N}}]_K = \sum_{j=1}^{6}[j,[i,v]_{V^N}]_K \leq 1$.

For $t \geq 1$

$$\begin{aligned}\sum_{j=1}^{6}[j,[t,i,\omega(\Omega)]_{K_{T,N}}]_K &= \sum_{j=1}^{6}[j,\frac{1}{1+\sum_{l=1}^{6}[l,[t-1,i,k(\Omega)]_{K_{T,N}}]_K}.([t-1,i,\omega(\Omega)]_{K_{T,N}}+[t-1,i,k(\Omega)]_{K_{T,N}})]_K \\ &= \frac{1}{1+\sum_{l=1}^{6}[l,[t-1,i,k(\Omega)]_{K_{T,N}}]_K}. \\ &\quad (\sum_{j=1}^{6}[j,[t-1,i,\omega(\Omega)]_{K_{T,N}}]_K + \sum_{j=1}^{6}[j,[t-1,i,k(\Omega)]_{K_{T,N}}]_K)\end{aligned}$$

Since $\sum_{j=1}^{6}[j,[t-1,i,\omega(\Omega)]_{K_{T,N}}]_K \leq 1$

[1] Principle of causality dear to physicists.
[2] Principle of inertia.

then $\sum_{j=1}^{6}[j,[t-1,i,\omega(\Omega)]_{K_{T,N}}]_K+\sum_{j=1}^{6}[j,[t-1,i,k(\Omega)]_{K_{T,N}}]_K \leq 1+\sum_{j=1}^{6}[j,[t-1,i,k(\Omega)]_{K_{T,N}}]_K$
so $\sum_{j=1}^{6}[j,[t,i,\omega(\Omega)]_{K_{T,N}}]_K \leq 1$
ω is called the canonical image function of *(v,k)* over width *(T,N)* □

Proposition 5. *For a window* (T,N)*, if* v *a pulse of width* N *and* k *a contribution of width* (T,N) *then the canonical image function of* (v,k) *over width* (T,N) *is a causal image function of width* (T,N).

Proof. Let $1 \leq t \leq T$. We note φ this canonical image function.
For $t=1$, $[1,i,\varphi(\Omega)]_{V_{T,N}} = [i,v]_{V^N} = [1,i,\varphi(\Omega')]_{V_{T,N}}$.
For $t \geq 1$, let $(\Omega,\Omega') \in \Omega_{T,N}^2$ checking $\forall\ 1 \leq i \leq N$, $\forall\ 1 \leq j \leq t+1$ $[j,i,\Omega]_{C_{T,N}} = [j,i,\Omega']_{C_{T,N}}$ then $\forall\ 1 \leq i \leq N$ $[1,i,\varphi(\Omega)]_{V_{T,N}} = [i,v]_{V^N} = [1,i,\varphi(\Omega')]_{V_{T,N}}$ and $\forall\ 1 \leq i \leq N$, $\forall\ 2 \leq j \leq t+1$

$$\begin{aligned}
[j,i,\varphi(\Omega)]_{V_{T,N}} &= \frac{1}{1+\sum_{l=1}^{6}[l,[j-1,i,k(\Omega)]_{K_{T,N}}]_K}.([j-1,i,\varphi(\Omega)]_{V_{T,N}}+[j-1,i,k(\Omega)]_{K_{T,N}}) \\
&= \frac{1}{1+\sum_{l=1}^{6}[l,[j-1,i,k(\Omega')]_{K_{T,N}}]_K}.([j-1,i,\varphi(\Omega)]_{V_{T,N}}+[j-1,i,k(\Omega')]_{K_{T,N}}) \\
&= \frac{1}{1+\sum_{l=1}^{6}[l,[j-1,i,k(\Omega')]_{K_{T,N}}]_K}.([j-1,i,\varphi(\Omega')]_{V_{T,N}}+[j-1,i,k(\Omega')]_{K_{T,N}}) \\
&= [j,i,\varphi(\Omega')]_{V_{T,N}}
\end{aligned}$$

□

Proposition 6. *For a window* (T,N)*, if* v *a pulse of width* N *and* k *a contribution of width* (T,N) *then the canonical image function of* (v,k) *over width* (T,N) *is natural image function of* v *over width* (T,N).

Proof. We note φ this canonical image function and e the element $(0,0,0,0,0,0) \in K$. According to the proposition 5 φ is a causal image function of width *(T,N)*. If $\forall\ \Omega \in \Omega_{T,N}$, $\forall\ 1 \leq i \leq N$, $\forall\ 2 \leq t \leq T$ $[t,i,k(\Omega)]_{K_{T,N}} = e$ then

$$\begin{aligned}
[t,i,\varphi(\Omega)]_{V_{T,N}} &= \frac{1}{1+\sum_{j=1}^{6}[j,[t-1,i,k(\Omega)]_{K_{T,N}}]_K}.([t-1,i,\varphi(\Omega)]_{V_{T,N}}+[t-1,i,k(\Omega)]_{K_{T,N}}) \\
&= \frac{1}{1+\sum_{j=1}^{6}[j,e]_K}.([t-1,i,\varphi(\Omega)]_{V_{T,N}}+e) \\
&= \frac{1}{1+0}.([t-1,i,\varphi(\Omega)]_{V_{T,N}}) \\
&= [t-1,i,\varphi(\Omega)]_{V_{T,N}}
\end{aligned}$$

□

Definition 17. Let v a element of V. v is complete if $\sum_{j=1}^{6}[j,v]_V = 1$.

Proposition 7. *For a window* (T,N)*, if* $1 \leq i \leq N$*,* v *a pulse of width* N *such as* $[i,v]_{V^N}$ *is complete,* k *a contribution of width* (T,N) *and* φ *the canonical image function of* (v,k) *over width* (T,N) *then* $\forall\ 1 \leq t \leq T$ $[t,i,\varphi(\Omega)]_{V_{T,N}}$ *is complete.*

Proof.
For $t=1$, $\sum_{j=1}^{6}[j,[1,i,\varphi(\Omega)]_{V_{T,N}}]_V = \sum_{j=1}^{6}[j,[i,v]_{V^N}]_V = 1$.
For $t \geq 1$

$$\begin{aligned}
\sum_{j=1}^{6}[j,[t,i,\varphi(\Omega)]_{V_{T,N}}]_V &= \sum_{j=1}^{6}[j,\frac{1}{1+\sum_{l=1}^{6}[l,[t-1,i,k(\Omega)]_{K_{T,N}}]_K}.([t-1,i,\varphi(\Omega)]_{V_{T,N}}+[t-1,i,k(\Omega)]_{K_{T,N}})]_K \\
&= \frac{1}{1+\sum_{l=1}^{6}[l,[t-1,i,k(\Omega)]_{K_{T,N}}]_K}. \\
&\quad (\sum_{j=1}^{6}[j,[t-1,i,\varphi(\Omega)]_{V_{T,N}}]_V+\sum_{j=1}^{6}[j,[t-1,i,k(\Omega)]_{K_{T,N}}]_K) \\
&= \frac{1+\sum_{j=1}^{6}[j,[t-1,i,k(\Omega)]_{K_{T,N}}]_K}{1+\sum_{l=1}^{6}[l,[t-1,i,k(\Omega)]_{K_{T,N}}]_K} \\
&= 1
\end{aligned}$$

□

3.2 Canonical contribution

Definition 18.

- A position is an element of the set $R = \mathbb{Z}^3$.
- For a window *(T,N)*, a position of width N is an element of the set R^N.
- For a window *(T,N)*, a position of width *(T,N)* is an element of the set $R_{T,N} = (R^T)^N$

Definition 19. For a window *(T,N)*, let r a position of width N. The function position of r over width *(T,N)* noted $\hat{r}$ is the function from $\Omega_{T,N}$ to $R_{T,N}$ such as $\forall\ \Omega \in \Omega_{T,N}$, $\forall\ 1 \le i \le N$ and $\forall$ $1 \le t \le T$ $[t, i, \hat{r}(\Omega)]_{R_{T,N}} = [i, r]_{R^N} + \sum_{j=1}^{t} [j, i, \Omega]_{\Omega_{T,N}}$.

Definition 20. η is the function defined as follows :

$$\begin{aligned} \eta : \mathbb{Q} &\rightarrow \mathbb{Q} \\ x &\rightarrow \begin{cases} 1 & \text{if } x = 0 \\ x & \text{otherwise} \end{cases} \end{aligned}$$

Definition 21. ϵ is the function defined as follows :

$$\begin{aligned} \epsilon : \mathbb{Q} &\rightarrow \mathbb{Q} \\ x &\rightarrow \begin{cases} x & \text{if } x \ge 0 \\ 0 & \text{otherwise} \end{cases} \end{aligned}$$

Definition 22. For $i \in \mathbb{N}$,

$$\bar{i} = \begin{cases} 2 & \text{if } i \in \{3,4\} \\ 3 & \text{if } i \in \{5,6\} \\ 1 & \text{otherwise} \end{cases}$$

$$\tilde{i} = \begin{cases} 1 & \text{if } i \in \{1,2,3\} \\ -1 & \text{otherwise} \end{cases}$$

Definition 23. For $H_g \in \mathbb{Q}$ and $N \in \mathbb{N}^*$. The canonical gravitational interaction of width N noted γ_g is the function from R^N to K^N such as $\forall\ r \in R^N$, $\forall\ 1 \le i \le N$ and $\forall\ 1 \le j \le 6$

$$[j, i, \gamma_g(r)]_{K^N} = H_g \sum_{l=1}^{N} \frac{\epsilon(\tilde{j}.([\bar{j}, l, r]_{R^N} - [\bar{j}, i, r]_{R^N}))^2 + \epsilon(\tilde{j}.([\bar{j}, i, r]_{R^N} - [\bar{j}, l, r]_{R^N}))^2}{\eta(\sum_{m=1}^{3}([m, l, r]_{R^N} - [\bar{j}, i, r]_{R^N})^2)^2}$$

Definition 24.

- A charge is an element of the set of integers $Q = \{-1, 0, 1\}$.
- For $N \in \mathbb{N}^*$, a charge of width N is an element of the Q^N.

Definition 25. For $H_e \in \mathbb{Q}$ and $N \in \mathbb{N}^*$, let q a charge of width N. The canonical electric interaction of q over width N noted γ_e is the function from R^N to K^N such as $\forall\ r \in R^N$, $\forall$ $1 \le i \le N$ and $\forall\ 1 \le j \le 6$

$$[j, i, \gamma_e(r)]_{K^N} = H_e \sum_{l=1}^{N} \frac{\epsilon(\tilde{j}.[l, q]_{Q^N}.[i, q]_{Q^N}.([\bar{j}, l, r]_{R^N} - [\bar{j}, i, r]_{R^N}))^2 + \epsilon(\tilde{j}.[l, q]_{Q^N}.[i, q]_{Q^N}.([\bar{j}, i, r]_{R^N} - [\bar{j}, l, r]_{R^N}))^2}{\eta(\sum_{m=1}^{3}([m, l, r]_{R^N} - [\bar{j}, i, r]_{R^N})^2)^2}$$

Definition 26. For $H_g \in \mathbb{Q}$, $H_e \in \mathbb{Q}$ and a window *(T,N)*, let r a position of width N and q a charge of width N. The canonical interaction of *(r,q)* over width *(T,N)* noted γ is the function from $\Omega_{T,N}$ to $K_{T,N}$ such as $\forall\ \Omega \in \Omega_{T,N}$, $\forall\ 1 \leq i \leq N$ and $\forall\ 1 \leq t \leq T$ $[t, i, \gamma(\Omega)]_{K_{T,N}} = [i, \gamma_g([t, \hat{r(\Omega)^*}]_{R_{N,T}})]_{K^N} + [i, \gamma_e([t, \hat{r(\Omega)^*}]_{R_{N,T}})]_{K^N}$.

Proposition 8. *For $H_g \in \mathbb{Q}$, $H_e \in \mathbb{Q}$ and a window* (T,N)*, if* r *a position of width* N*,* q *a charge of width* N and γ *the canonical interaction of* (r,q) *over width* (T,N) *then γ is a contribution.*

Proof. Let $1 \leq t \leq T$, $(\Omega, \Omega') \in \Omega^2_{T,N}$ checking $\forall\ 1 \leq i \leq N$, $\forall\ 1 \leq j \leq t$ $[j, i, \Omega]_{C_{T,N}} = [j, i, \Omega']_{C_{T,N}}$ then $\forall\ 1 \leq i \leq N$, $\forall\ 1 \leq j \leq t$ $[j, i, \hat{r}(\Omega)]_{R_{T,N}} = [i, r]_{R^N} + \sum_{l=1}^{j} [l, i, \Omega]_{\Omega_{T,N}} = [j, i, \hat{r}(\Omega')]_{R_{T,N}}$ so $\forall$ $1 \leq j \leq t$ $[j, \hat{r(\Omega)^*}]_{R_{N,T}} = [j, \hat{r(\Omega')^*}]_{R_{N,T}}$ so $\forall\ 1 \leq i \leq N$, $\forall\ 1 \leq j \leq t$ $[i, \gamma_g([j, \hat{r(\Omega)^*}]_{R_{N,T}})]_{K^N} = [i, \gamma_g([j, \hat{r(\Omega')^*}]_{R_{N,T}})]_{K^N}$ and $[i, \gamma_e([j, \hat{r(\Omega)^*}]_{R_{N,T}})]_{K^N} = [i, \gamma_e([j, \hat{r(\Omega')^*}]_{R_{N,T}})]_{K^N}$. Finally $\forall\ 1 \leq i \leq N$, $\forall\ 1 \leq j \leq t$ $[j, i, \gamma(\Omega)]_{K_{T,N}} = [j, i, \gamma(\Omega)]_{K_{T,N}}$ so γ is a contribution.

γ is called the canonical contribution of *(r,q)* over width *(T,N)*. □

Definition 27. For $H_g \in \mathbb{Q}$, $H_e \in \mathbb{Q}$ and a window *(T,N)*, let v a pulse of width N, r a position of width N, q a charge of width N and γ the canonical contribution of *(r,q)* over width *(T,N)*. The canonical image function of *(v,γ)* over width *(T,N)* is called the image function with canonical contribution of *(v,r,q)* over width *(T,N)*.

4 Observable

Definition 28. For a window *(T,N)*, let A a non empty set. A observable function of A over width *(T,N)* is a function from $\Omega_{T,N}$ to A. If $\hat{A}$ an observable function of A over width *(T,N)* then $Im(\hat{A})$ is called spectrum of $\hat{A}$.

Definition 29. Let A a non empty set, the unitary function of A noted U_A is the function defined as follows :

$$\begin{aligned} U_A : A^2 &\rightarrow \mathbb{N} \\ (a_1, a_2) &\rightarrow \begin{cases} 1 & \text{if } a_1 = a_2 \\ 0 & \text{otherwise} \end{cases} \end{aligned}$$

Definition 30. For a window *(T,N)*, let A a non empty set, $\hat{A}$ the observable function of A over width *(T,N)* and f an image function of width *(T,N)*. The probability function of $\hat{A}$ noted $\hat{p}_A$ is the function defined as follows :

$$\begin{aligned} \hat{p}_A : A &\rightarrow \mathbb{Q} \\ a &\rightarrow \sum_{\Omega \in \Omega_{T,N}} U_A(\hat{A}(\Omega), a).p_f(\Omega) \end{aligned}$$

Proposition 9. *For a window* (T,N)*, if* A *a non empty set, $\hat{A}$ an observable function of* A *over width* (T,N) *and* f *an image function of width* (T,N) then $\forall a \in A \setminus Im(\hat{A})$ $\hat{p}_A(a) = 0$.

Proof. $\forall a \in A \setminus Im(\hat{A})$ $U_A(\hat{A}(\Omega), a) = 0$ so $\forall a \in A \setminus Im(\hat{A})$ $\hat{p}_A(a) = 0$. □

Proposition 10. *For a window* (T,N)*, if* A *a non empty set, $\hat{A}$ an observable function of* A *over width* (T,N) *and* f *an image function of width* (T,N) then $\sum_{a \in A} \hat{p}_A(a) = 1$.

Proof. $\forall \Omega \in \Omega_{T,N}, \sum_{a\in A} U_A(\hat{A}(\Omega), a) = U_A(\hat{A}(\Omega), \hat{A}(\Omega)) + \sum_{a\in A\setminus\{\hat{A}(\Omega)\}} U_A(\hat{A}(\Omega), a) = 1 + 0 = 1.$

$$\begin{aligned}
\sum_{a\in A} \hat{p}_A(a) &= \sum_{a\in A} \sum_{\Omega\in\Omega_{T,N}} U_A(\hat{A}(\Omega), a).p_f(\Omega) \\
&= \sum_{\Omega\in\Omega_{T,N}} \sum_{a\in A} U_A(\hat{A}(\Omega), a).p_f(\Omega) \\
&= \sum_{\Omega\in\Omega_{T,N}} p_f(\Omega).(\sum_{a\in A} U_A(\hat{A}(\Omega), a)) \\
&= \sum_{\Omega\in\Omega_{T,N}} p_f(\Omega)
\end{aligned}$$

According to 3 $\sum_{\Omega\in\Omega_{T,N}} p_f(\Omega) = 1$, we deduce that $\sum_{a\in A} \hat{p}_A(a) = 1$. □

5 Conclusion

The theory contains a set of definitions that seemed necessary to me as a starting point. Currently, it does not give any important results due to its complexity. Additional definitions must be introduced such as the definition of mass, energy and particle. The determination of the values of the constants H_g and H_e would be the bridge between my approach and the other approaches. An important effort must be made to have the status of an acceptable physical theory and thus get out of speculation.