The Onduscular Equations

For the electron equation, we start from the Ondusculaire theory (“onde” and “corpuscle” in French) is referred to an elementary particle with no mass and which are moving at light speed and acts like a wave and particle: photon, graviton, magnetron, $particle_T$, etc…and particle that has mass and a speed smaller than light (atoms nucleus, positron, electron, $particle_M$…). The onduscular equation $\frac{2m}{h^2}(E-U(r))f(r,t)+\frac{R}{r}\frac{\partial^2(f(r,t))}{\partial r^2}=\frac{1}{V^2}\frac{\partial^2 f(r,t)}{\partial t^2}$ (1) is valid in both spherical and cylindrical coordinates it emerges from a combination of Schrodinger which is the first degree atemporal and Klein-Gordon temporal equation of the second degree with parameters R chosen so for a small radius $r_{Bohr,}$ for atomic value to coincide with the Schrodinger equation exactly and predict the evolution of wave function to huge values of r about the galactical distances. The wave function of the Schrodinger equation has the supposition that is null at infinity, is normed, has the dimension of $[L^{-3/2}]$, and predicts the probability of the existence of the microparticle in volume dV. Schrodinger eq is: $\frac{2m}{h^2}(E-U(r))f(r,t)+\frac{\partial^2(f(r,t))}{\partial r^2}=ih\frac{\partial f(r,t)}{\partial t}$ (2) & Klein-Gordon equation is $\frac{2m}{h^2}f(r,t)+\frac{\partial^2(f(r,t))}{\partial r^2}=\frac{1}{c^2}\frac{\partial^2 f(r,t)}{\partial t^2}$ (3) thus eq (1) for m = 0 is a *wave equation* with *variable parameters* and seems to be true $\frac{R}{r}\frac{\partial^2(f(r,t))}{\partial r^2}=\frac{1}{V^2}\frac{\partial^2 f(r,t)}{\partial t^2}$ (4). But all 3 equations are different and also wave equation is not satisfactory $\frac{\partial^2(f(r,t))}{\partial r^2}=\frac{1}{c^2}\frac{\partial^2 f(r,t)}{\partial t^2}$ (5),

The onduscular wave function of onduscular equation has the supposition as null at R (or 2R) is normed, has the dimension of $[L^{-3/2}]$, and predicts the probability of the existence of the microparticle in volume dV. Also, a condition of the derivate = R in origin verifies the condition that the speed of interaction has the velocity V whatever will be that. The value of R = $3.566642397\cdot 10^{22}$ m is calculated in OndSLP.pdf:

OndSLP.pdf (geocities.ws)

As you can see function $f_1(r,t) = rf(r,t) = rg(r)u(t)$ is the Onduscular Wave Function (OWF) multiplied by r denoted f(r,t) in the case of graviton equation and other particles that travel with the speed of light so we call it Effective Onduscular Wave Function or EOWF. The EOWF has the dimension of $[L^{-1/2}]$, and OWF has the dimension of $[L^{-3/2}]$ with separate variables and g(r) has dim of $[L^{-3/2}]$, u(t) is adimensional as in the Schrodinger equation. Both equations Onduscular and Schrodinger have almost the same value of the function that depends on r, g(r) multiplied by an adimensional exponential factor that depends on time t. The relation between f1(r,t) EOWF and f(r,t) OWF is $f_1(r,t) = rf(r,t) = rg(r)u(t)$ thus we calculus EOWF which is easier, and we return to the OWF by dividing by r the function $f_1(r,t) \Rightarrow f(r,t) = f_1(r,t)/r$.

The duality wave-particle is generated by the fact that all atoms and particles receive energy from stars and are one-time quanta particles and one-time quanta waves of probability and have the definition $p(x,t)=|\psi(x,t)|^2$ as in Bohm’s Quantum Potential and between states executes an instant quantum jump from the successive position in space due to the granularity of time. Also suppose that force-mediating particles of these interactions are electronic neutrinos for gravity which is a Majorana particle with spin quantum number s = 0, photons for light, magnetrons for magnetic forces, and tau neutrino for time which is a Dirac particle with spin quantum number s = -½ ... Space has a special treatment but we bearly say that muon neutrino is the place-mediating particle which is a Dirac particle with spin quantum number s = -½. The other elementary stable particle is the electron, proton, neutron, and audion which are treated as an equation in TOnduscular.pdf;

Schrodinger's and onduscular equations inference document

The initial derivate = R, the boundary condition f(R)=0 or f(2R)=0, or another initial condition was determined by dowsing. The suppositions that I make are in the file Supposition.pdf;

The Onduscular Wave Function (OWF) is the value of particle into space-time at instant t into spherical, cylindrical, or Cartesian cords specific for every particle in particular: for the graviton is for a spatial wave function $[L^{-3/2}]$ and of the function of graviton f (r,t) is $[L^{-3/2}]$ ...and is related to the probability to find the graviton in the local space from 0 to 2·R (where $R = 3.567 \cdot 10^{22}$ m) these are onduscular wave function concrete value ("valori concrete ale functiei de unda onduscolara" in Romanian language) as you can see the f is bounded function ("marginita") and we can normalize that function. Besides these values 0 to 2·R for the graviton the wave function has improper virtual values ("Valori improprii virtuale") and the function is not bordered in fact for r over 2R the force of attraction change sign, goes to infinity when r->-∞ (repulsion) and extremely high but not ∞ in origin. At the normalization condition that is integral with respect to r and for t fix, $t = t_0$ we have: $4\pi \int_0^{2R} \psi(r,t_0)^2 dr = 1$ where ψ(r,t)=f(r,t)/r.

In the graviton equation f(r,t)= u(t)·g(r); where $[L]^{-3/2}$ and the probability to find the graviton into the volume dV is $P(r,t) = |\psi(r,t)^2|dV$ in 3-dimensional space as in Bohm's Quantum Potential. To and from the condition that the velocity of all the below particles, except the electron, is c we recalculate the basis-separated solution and the singular solution of onduscular equation each satisfying a set of three singular conditions. We mention that the below-denoted k_1, k_2, k_3, k_4, k_5 are real constants, which are specific to the particle. We supposed that all the functions are separable into a produced single function by one variable. The theory of everything should describe all of the characteristics of the moving particle into the space coordinate and temporal determination, introducing the Effective Onduscular Wave Function which is the value of particle into the space-time at instant t into spherical, cylindrical, or Cartesian cords:

1) The Graviton-Equation

Starting from the onduscular equation we will particularize for graviton, tau neutrino, photon, magnetron, and electron into the potential field U(r) depending on the radius. It's not important to have the exact general solution as shown, we need the structure of the general solution of the onduscular equation

$$\frac{\mathbf{R}}{\mathbf{r}}\Delta\mathbf{f}(\mathbf{r},\mathbf{t}) = \frac{\mathbf{1}}{\mathbf{c^2}}\frac{\partial^2\mathbf{f}(\mathbf{r},\mathbf{t})}{\partial\mathbf{t^2}} \qquad (1)$$

where R= is a constant distance first we search for the basis of solutions that have separated variables, thereafter we impose the initial conditions for the graviton such as to sort out the singular solution of interest:

A) [f(r,t) = 0 for r=2·R for any t] that can be replaced with g (2·R) = 0;

B) g'(0) = R for r = 0 the initial derivate;

C) and that verifies the condition that the speed of interaction is the velocity of light c.

The above 3 conditions imposed onto the Graviton Effective Wave Function f(r,t) uniquely determine the basis of separated solutions of interest. Condition C) can be expressed employing the divergence operator in general coordinates r and c·t thus obtaining the simple equation div[f(r,c·t)]=1, expanded to

$$\frac{df(r,t)}{dt} = \frac{\partial[u(t)g(r)]}{\partial t} + \frac{\partial[u(t)g(r)]}{\partial r} \cdot \frac{\partial r}{\partial t} = c \qquad (2)$$

Since the graviton speed will be c regardless of the length of the radius r, which means that: $\frac{\partial r}{\partial t} = c$ for any r, we obtain that for any r and c·t:

$$g(r)\frac{\partial u(t)}{\partial t} + u(t)\frac{\partial g(r)}{\partial r} \cdot c = c \qquad (3)$$

2) The Tau Neutrino-Equation

Starting from the onduscular equation particularized for Tau Neutrino we have:

$$\frac{\mathrm{R}}{\mathrm{r}}\Delta \mathrm{f}(\mathrm{r},\mathrm{t}) = \frac{1}{\mathrm{c}^2}\frac{\partial^2 \mathrm{f}(\mathrm{r},\mathrm{t})}{\partial \mathrm{t}^2} \qquad (1bis)$$

where R= is a constant distance first we search for the basis of solutions that have separated variables, thereafter we impose the initial conditions for the tau neutrino such as to sort out the singular solution of interest:

A) [f(r,t) = 0 for r=R for any t] that can be replaced with g (R) = 0;

B) g'(0) = R for r = 0 the initial derivate;

C) and that verifies the condition that the speed of interaction is the velocity of light c.

The above 3 conditions imposed onto the Tau Neutrino Effective Wave Function f(r,t) uniquely determine the basis of separated solutions of interest. Condition C) can be expressed employing the divergence operator in general coordinates r and c·t thus obtaining the simple equation div[f(r,c·t)]=1, expanded to:

$$\frac{df(r,t)}{dt} = \frac{\partial[u(t)g(r)]}{\partial t} + \frac{\partial[u(t)g(r)]}{\partial r} \cdot \frac{\partial r}{\partial t} = c \qquad (2bis)$$

Since the graviton speed will be c regardless of the length of the radius r, which means that

$\frac{\partial r}{\partial t} = c$ for any r, we obtain that for any r and c·t:

$$g(r)\frac{\partial u(t)}{\partial ct} + u(t)\frac{\partial g(r)}{\partial r} = 1 \qquad (3bis)$$

3) The Muon Neutrino-Equation

Starting from the onduscular equation particularized for Muon Neutrino we have:

$$\frac{\boldsymbol{R_s}}{\mathbf{r}}\Delta \mathbf{f}(\mathbf{r},\mathbf{t}) = \frac{\mathbf{1}}{\mathbf{c}^2}\frac{\boldsymbol{\partial}^2 \mathbf{f}(\mathbf{r},\mathbf{t})}{\boldsymbol{\partial}\mathbf{t}^2} \qquad (1bis)$$

where Rs= is a constant distance of about $\sim 7.0613 \cdot 10^{25}$ m first we search for the basis of solutions that have separated variables, thereafter we impose the initial conditions for the muon neutrino such as to sort out the singular solution of interest:

A) [f(r,t) = 0 for r=R_s for any t] that can be replaced with g (R_s) = 0;

B) g'(0) = R_s for r = 0 the initial derivate;

C) and that verifies the condition that the speed of interaction is the velocity of light c.
The above 3 conditions imposed onto the Muon Neutrino Effective Wave Function f(r,t) uniquely determine the basis of separated solutions of interest. Condition C) can be expressed employing the divergence operator in general coordinates r and c·t thus obtaining the simple equation div[f(r,c·t)]=1, expanded to

$$\frac{df(r,t)}{dt} = \frac{\partial[u(t)g(r)]}{\partial t} + \frac{\partial[u(t)g(r)]}{\partial r} \cdot \frac{\partial r}{\partial t} = c \qquad \text{(2bis)}$$

Since the graviton speed will be c regardless of the length of the radius r, which means that

$\frac{dr}{dt} = c$ for any r, we obtain that for any r and c·t:

$$g(r)\frac{\partial u(t)}{\partial t} + u(t)\frac{\partial g(r)}{\partial r} \cdot c = c \qquad \text{(3bis)}$$

4) The Photon-Equation

A specific solution of the onduscular equation for the photon where R is a constant distance is

$$\frac{\mathrm{R}}{\mathrm{r}}\Delta\mathrm{H}(\mathrm{r},\theta,\mathrm{z},\mathrm{t}) = \frac{1}{\mathrm{c}^2}\frac{\partial^2\mathrm{H}(\mathrm{r},\theta,\mathrm{z},\mathrm{t})}{\partial\mathrm{t}^2}\ . \qquad (5)$$

Considering that the photon is invariant of θ (z axis symmetry) in cylindrical coordinate with z axis symmetry, we are interested in searching for the separable solutions f(r,z,t) = H_3(r) H_4(z) u(t) with z axial symmetry z axis, which satisfy the following four singular conditions for the photon
A) [f(r,z,t) = 0 for r=R for any t and z] that can be replaced with H_3(R) = 0;
B) H_3'(1/R) = R for r = 1/R the initial derivate;
C) and that verifies the condition that the speed of a photon is the velocity of light c.
Since$H_4(z) = -(\sin(kz) + \cos(kz))$, the wave pulsation is $k = \nu = \frac{E}{h}$, where E is the photon energy and h is the Plank constant.
Condition C) is referring to the velocity of the photon which is c, the speed of light, irrespective of r and c·t.
Considering that H(r,z,θ,t) is, in fact, f(r,z,t) we have

$$\frac{df(r,z,t)}{dt} = \frac{\partial[u(t)H3(r)H4(z)]}{\partial t} + \frac{\partial[u(t)H3(r)H4(z)]}{\partial r} \cdot \frac{dr}{dt} + \frac{\partial[u(t)H3(r)H4(z)]}{\partial z} \cdot \frac{\partial z}{\partial t} = c \qquad (6)$$

By dividing with c, we obtain

$$\frac{\partial[u(t)H3(r)H4(z)]}{\partial ct} + \frac{\partial[u(t)H3(r)H4(z)]}{\partial r} + \frac{\partial[u(t)H3(r)H4(z)]}{\partial z} \cdot \frac{\partial z}{\partial t}\frac{\partial t}{\partial r} = 1 \qquad (7)$$

And $$\frac{\partial[u(t)H3(r)H4(z)]}{\partial ct} + \frac{\partial[u(t)H3(r)H4(z)]}{\partial r} + \frac{\partial[u(t)H3(r)H4(z)]}{\partial z} \cdot \frac{\partial z}{\partial r} = 1 \qquad (8)$$

But $\frac{\partial z}{\partial r} = 0$, therefore,

$$\frac{\partial[u(t)H3(r)H4(z)]}{\partial ct} + \frac{\partial[u(t)H3(r)H4(z)]}{\partial r} = 1, \qquad (9)$$

Thus $H4(z)H3(r)\frac{\partial u(t)}{\partial ct}+u(t)H4(z)\frac{\partial[H3(r)]}{\partial r}=1,$ (10)

where the constant distance R is about $3.567\cdot10^{22}$ m, which is slightly below 3.77 million light-years, probably the same value as for the equation's cases for the graviton, the tau neutrino, the magnetron, and the electron. Only the R_s constant from the quantic space is around 14.93 billion light-years and differs from the constant R for the electronic neutrino. A simple observation of the star-sky shows that there are no galaxies larger in diameter than 3.77·4 = 14.3 million light-years, simply because after that distance the rejection of the star occurs, the circumstance that explains why the universe is acceleratedly expanding.

5) The Magnetron-Equation

A specific solution of the onduscular equation for the photon where R is a constant distance is

$$\frac{R}{r}\Delta H(r,\theta,z,t)=\frac{1}{c^2}\frac{\partial^2 H(r,\theta,z,t)}{\partial t^2} \quad \text{(5bis)}$$

Considering that the magnetron is invariant of θ (z axis symmetry) in cylindrical coordinate with z axis symmetry, we are interested in searching for the separable solutions $f(r,z,t) = H_3(r)\,H_4(z)\,u(t)$ with z axial symmetry z axis, which satisfy the following four singular conditions for the magnetron; **for magnetron the condition is almost the same as from the photon equation **:
A) [f(r,z,t) = 0 for r=2R for any t and z] that can be replaced with $H_3(2R) = 0$;
B) $H_3'(1/R) = R$ for r = 1/R the initial derivate;
C) And that verifies the condition that the speed of a photon is the velocity of light c
The function for z axis is $H_4(z)=-(\sin(kz)+\cos(kz))$
Considering the magnetron quanta has the same energy as photon energy, h_m but with a higher value as Planck constant $E=h_m\cdot\nu$ were $h_m \sim 2.417696\cdot10^{-8}$eV the constant of minimum interaction of the magnetron is about 5845962 greater than Planck constant $h_m \sim 5845962\cdot h$.
Thus we have the wave pulsation of k·z of the axis of propagation thus $\frac{E}{h_m}=k$ since $H_4(z)=-(\sin(kz)+\cos(kz))$, the wave pulsation is $k=\nu=\frac{E}{h_m}$, where E is the magnetron energy and h_m is a constant with the value above.
And the other condition for the equation is referring to the velocity of the magnetron which is c the speed of light all the time therefore for the magnetron we have equations (6)(7)(8)(9)(10).

6) The Electron-Equation

For the electron, we have an equation that ignores the relativistic mass effect where m, E, and V are the electron mass, energy, and velocity into the potential field U(r).

$$2m\frac{E-U(r)}{h^2}f1(r,t)+\frac{R}{r^2}\frac{\partial^2(r\cdot f1(r,t))}{\partial r^2}=\frac{1}{V^2}\frac{\partial^2 f1(r,t)}{\partial t^2} \quad (1)$$

With $U(r)=-e^2/r$ and total orbital angular magnetic moment L^2 we have

$$\frac{2m}{h^2}\left(E+\frac{e^2}{r}+\frac{L^2}{2mr^2}\right)f1(r,t)+\frac{R}{r^2}\frac{\partial^2\left(r\cdot f1(r,t)\right)}{\partial r^2}=\frac{1}{V^2}\frac{\partial^2 f1(r,t)}{\partial t^2} \quad (2)$$

Or with $E=E_0\cdot E_R$ where Rydberg energy E_R is: $E_R=\frac{me^4}{32\pi^2\varepsilon^2 h^2}$ and $L^2=l\cdot(l+1)\cdot\hbar^2$ azimuthal magnetic number l we have:

$$\frac{2m}{h^2}\left(E_0+\frac{8\cdot\pi\cdot\varepsilon}{r}+\frac{l\cdot(l+1)}{r^2}\right)f1(r,t)+\frac{R}{r^2}\frac{\partial^2\left(r\cdot f1(r,t)\right)}{\partial r^2}=\frac{1}{V^2}\frac{\partial^2 f1(r,t)}{\partial t^2} \quad (3)$$

This equation is approximately the Schrodinger equation for the radius small. That is for ~ Bohr radius (rb) there is a linear transformation that for a certain R (a simple combination of constants equal to $R = 3.567\cdot10^{22}$ m) the equation (1) and r<<R there is a linear transformation that for the change of variable $r = r_{Bohr}\,\rho$ and $h(r)=g(\rho)\,\frac{2R-\rho\cdot r_B}{2R}$ That for the interval of r between [0,2R] and ρ > 0 for r and ρ small the function f(r) and h(ρ) are equal and the equation equivalent is in the file OndSLP.mw and the change of variable change also the sign of member depending azimuthal quantum number because the minus into variable change (-ρ·rb);

$$\frac{1}{\rho}\frac{d^2}{d\rho^2}\left(\rho h(\rho)\right)+\frac{2m}{h^2}\left(E+\frac{e^2}{\rho}\right)h(\rho) \quad (4)$$

The Schrodinger without angular magnetic dependence equation (8) is also equation (19.8) in Feynman's article**. Thus the Quantum Torsion Field Theory includes all the classical Schrodinger equations and the calculus of the orbital of the atoms with angular dependence which is for the general solution**. Thus equation (1) is a Quantum Field Equation of electric classical Schrodinger equation, magnetic and light (cylindrical cords), and gravitational (spherical cords) quantic field for the microscopic world.

Now starting from (1) we have:

$$\frac{2m}{h^2}\left(E+\frac{e^2}{r}+\frac{L^2}{2mr^2}\right)u(t)g(r)+\frac{u(t)R}{r^2}\frac{\partial^2(r\cdot g(r))}{\partial r^2}=\frac{g(r)}{V^2}\frac{\partial^2 u(t)}{\partial t^2} \text{ Dividing by } u(t)\cdot g(r) \quad (5)$$

$$\frac{2m}{h^2}\left(E+\frac{e^2}{r}+\frac{L^2}{2mr^2}\right)+\frac{R}{g(r)r^2}\frac{\partial^2(r\cdot g(r))}{\partial r^2}=\frac{1}{u(t)\cdot V^2}\frac{\partial^2 u(t)}{\partial t^2} \quad (6)$$

Equation with separate variables:

$$\frac{1}{u(t)\cdot V^2}\frac{\partial^2 u(t)}{\partial t^2}=k^2 \text{ With solution: } u(t)=\sinh\left(V\cdot k\cdot t\right) \quad (7)$$

$$\frac{2m}{h^2}\left(E+\frac{e^2}{r}+\frac{L^2}{2mr^2}\right)+\frac{R}{g(r)r^2}\frac{\partial^2(r\cdot g(r))}{\partial r^2}=k^2 \quad (8)$$

$$\frac{2m}{h^2}\left[\left(E+\frac{e^2}{r}+\frac{L^2}{2mr^2}\right)-\frac{h^2}{2m}k^2\right]\cdot g(r)+\frac{R}{r^2}\frac{\partial^2(r\cdot g(r))}{\partial r^2}=0 \quad (9)$$

Considering electron into the potential field $U(r) = -\frac{e^2}{r}$ and $E_{Rydberg}$ energy $E_{Rydberg}$

$E_R = \frac{me^4}{32\pi^2\varepsilon_0^2h^2}$ = 13,6eV or $2.179\cdot10^{-18}$ J and $r_B = \frac{4\pi\varepsilon_0 h^2}{me^2}$ radius r_{Bohr} =0,529Angstrom

$$\frac{2m}{h^2}\left[\left(E + \frac{e^2}{r} + \frac{L^2}{2mr^2}\right) - \frac{h^2}{2m}k^2\right]\cdot g(r) + \frac{R}{r^2}\frac{\partial^2(r\cdot g(r))}{\partial r^2} = 0 \qquad (10)$$

And we have the Feynman formula for the electron of a hydrogen atom (8) we change notation:

$$\frac{1}{\rho}\frac{d^2}{d\rho^2}\left(\rho g(\rho)\right) + \frac{2m}{h^2}\left(E + \frac{e^2}{\rho}\right)g(\rho) \qquad (11)$$

For a general solution, we search for the separated solutions $f_{(r,t)}$=g(r)u(t) of this equation, that satisfies the following four singular conditions:
A) the initial condition g(R)=0 and $g(r_B)$=0;
B) g'(0) = R for r = 0 the initial derivate;
C) and that verifies the condition that the velocity of the electron is $V = \frac{\partial f(r,t)}{\partial t}$ thus

$$\frac{df(r,t)}{dt} = \frac{\partial[u(t)g(r)]}{\partial t} + \frac{\partial[u(t)g(r)]}{\partial r}\cdot\frac{\partial r}{\partial t} = V$$

According to Einstein's relativity, the mass is multiplied by a factor of $\sqrt{1-\frac{V^2}{c^2}}$ therefore we have:

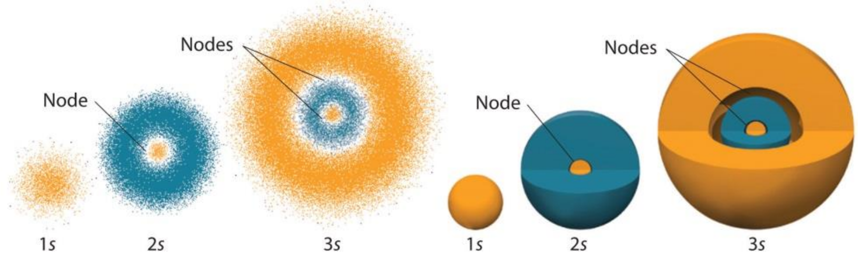
$$2m\frac{E-U(r)}{h}\sqrt{1-\frac{V^2}{c^2}}\,f(r,t) + \frac{R}{r^2}\frac{\partial^2\left(r\cdot f(r,t)\right)}{\partial r^2} = \frac{1}{V^2}\frac{\partial^2 f(r,t)}{\partial t^2} \qquad (12)$$

Thus, condition B) and C) initial value condition: g(R) = 0, D(g)(0) = R, f(rb) = 0; and the consistent condition of velocity:

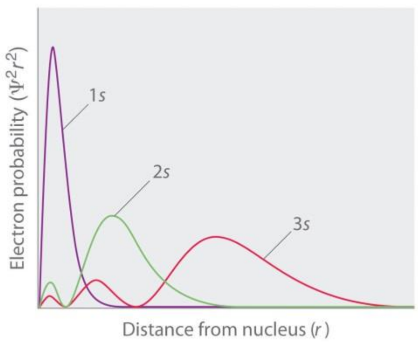
$$V = u(t)\cdot\frac{\partial g(r)}{\partial r}V + g(r)\cdot\frac{\partial g(r)}{\partial t} \qquad (13)$$

Thus for r = 0 we have $V = u(t)\cdot R\cdot V + g(0)\cdot\frac{\partial g(r)}{\partial t}$ for V = a·c the solution is (14):

$$u(t) = \frac{1}{R} + C_1\cdot e^{-\frac{R\cdot a\cdot c\cdot t}{g(0)}}$$



(a) Electron probability **(b) Contour probability**



(c) Radial probability

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