How Gas and Force Work Together to Create Geometrical Dispersed Patterns Based On an Object's Shape

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Abstract

This unique mathematical method for understanding the flow of gas through each individual objects shape will show us how we can produce physical functions for each object based on the dissemination of gas particles in accordance to its shape. We analyze its continuum per shape of the object and the forces acting on the gas which in return produces its own unique function for the given object due to the rate at which forces were applied to the gas. We also get to examine the different changes in the working rate due to the effect of its volume and mass from the given objects shape with our working equation discovered through green's and gaussian functions.

Keywords: Volume, Mass, gas, particles, Object, Shape, Green's functions, Gaussian functions, force, work, rate

1 Introduction

If you are ever so interested in how the scattering of gas particles produces its own function according to the object's shape and how the measurements of force, volume, mass and acceleration influences the limitations of the dispersion of gas, then this is going to be the article that will scientifically and mathematically dazzle you. Monteiro PJM, Rycroft CH, Barenblatt GI (2012) , sought out a mathematical model to better understand the flow of gas by experimenting with the exertion of random forces acting upon it [1]. This in return helps us form our equation functions for the forces exerted on the gas particles. Why is this topic of any beneficiary to the scientific community you may ask? I am glad that my presupposition of this honest question just maybe very well resonating in your mind as you read this and I would like to reassure you the fact that the element of gas is widely examined throughout science. Air, helium, nitrogen, natural gas and carbon dioxide are only just a few types of gas that are widely talked about and studied in chemistry for example. But this mathematical application can be used for all the types of gas known to us here on earth. We are specifically focusing on the general idea of gas and how the forces exerted on it can produce mathematical functions and which can then be used in other areas of physics and mathematics to be examined and studied. Let's start out by introducing the measurement of force.

2 Introducing the Equation of Force to the Gaussian Integral Equation and Green's Function to Explain Any Shaped Object

The simple equation to measure force, $F = ma$ will be used to analyze the geometric dispersion of gas that fills up the physical object. We first start off this application by introducing the forces acting on the mass of gas. We then confirm the limitation ι of its volume of gas filled in each shape described. It's noted that we need to combine the gaussian integral equation and green's function to properly describe the analysis of the flow of gas as confirmed by Kazuo Ohtaka (2006) and Joseph Ochterski (2000) whom both describe similar results in which gas as the chemical compound was used to describe the rate of force for when gas particles have become dispersed over a given area [2] [3].

$$\underset{F}{\rightarrow}\left(\frac{\iota^2 \cdot M\triangledown}{A\triangledown_\vartheta}\right)\lim_{\iota\to\infty}\sum_{\iota}\partial^2_{\vartheta(\gamma)}\left(\underset{F}{\rightarrow}\left(\triangledown^\gamma\frac{\partial^2\iota}{\partial\vartheta^2}\right)\partial^2\cdot\triangledown\right)=0 \tag{1}$$

$$\underset{MV}{\rightarrow}\partial\triangledown_\vartheta\int\int\int\lim_{\iota\to\infty}\sum_{\iota}\frac{\partial\gamma^2}{\partial\triangledown}\exp(\varepsilon_\tau+2\vartheta)-\partial_\varepsilon^{\iota^2}dV\,d\iota\,dt \tag{2}$$

Theorem 1. We can see the forces multiplying by the masses consecutively to form geometric patterns of gas within a given time frame in the first two equations presented. Now that we have the equation for the force of gas using gaussian equation and green's functions as seen in expression (3), let us trying evaluating a function within an application to see how the equations manifest using this method.

$$\int\int \nabla \underset{MV}{\rightarrow} \log \sum_{\varepsilon\vartheta/\partial_2}^{1} \frac{\partial\iota_2 + \underset{F}{\rightarrow} \iota\nabla}{\partial\vartheta_2} + {\tau_2}^{\gamma} dV d\iota \tag{3}$$

Proposition 1. Suppose Π within a cylindrical pipe spreads out a gas ξ within the boundary function described in expression (4). Now, we are describing the function where force, mass and volume are applied already. We will evaluate its continuum based off of expression (4) to see what our rate at which gas will be flowing.

$$\left(2\psi_\theta - \frac{1}{3}(\tau^{2-1\theta} + \varepsilon)\right) \tag{4}$$

Lemma 1. Using the new equation where we now applied the forces of the given function described in expressions (3) and (4), we can see the transitional forces of the gaussian equation acting on the mass of gas in relation to green's function which are now stimulating the production of gas particles.

$$2\psi_\theta - \frac{1}{3}\sum_{\varepsilon/\xi+\tau}^{1}(\tau^{2-1\theta} + \varepsilon)\left[\frac{3}{1} + \frac{1}{3}\tau\frac{\theta_\varepsilon^2 + \cos\frac{2.667^{\tau^2}\cdot\Pi}{1^3\psi(1\theta)\Pi}}{2\cos\varphi(\theta)}(2.667)\psi^1\right] \tag{5}$$

$$2\psi_\theta - \frac{1}{3}\sum_{\varepsilon/\xi+\tau}^{1}(\tau^{2-1\theta} + \varepsilon)\left[(2.667\Pi)^2\psi^\tau\frac{2\theta^{2-\varepsilon}(1)^{\frac{2.667^{\tau^2}\cdot\Pi}{1^3\psi(1\theta)\Pi}}}{\theta_2\cos(\psi)}\right] \tag{6}$$

$$2\psi_\theta - \frac{1}{3}\sum_{\varepsilon/\xi+\tau}^{1}(\tau^{2-1\theta} + \varepsilon)\left[(2.667)^\tau\psi(2\theta_\varepsilon)\cos^2\theta\right] \tag{7}$$

We can see from the three previous equations that Π is redundant as ξ is released from the pipe. Now the coefficient ψ^τ has to support the constant release of gas for φ. Our function 2.667 which can also technically be described as the function of our given mass that we know so far, has to now be evaluated continuously to provide the most effective results. This follows on par with what, Koshlyakov Smirnov (1964) describes during his presentation of his applications of laplace and poisson used in conjunction with green's functions to pinpoint the viscosity of the liquid as gas is released into the air. This ultimately led him to find the volume of the liquid which pinpointed the mass of the gas released [4].

$$2\psi_\theta \int_{\tau/(2.667)} \sum_{\varepsilon/\xi+\tau}^{1} (\tau^{2-1\theta} + \varepsilon) \left[(2.667)^\tau \psi(2\theta_\varepsilon) \cos^2 \theta\right] d\psi \tag{8}$$

Theorem 2. It is shown in expression (8) that the disseminated particles of gas are being directed out through the pipe due to the force τ acting on ψ. This brings us back to $F = ma$. We already conceded that the function has the operations where force, mass and volume are applied already. But Clearly, we can see that τ is blatantly the force acting on the gas particles in this case. Also, knowing that Π is clearly the volume and ξ is obviously our acceleration, the verified equation in expression (3) is in working order according to the function in expression (4). This allows us to see the outcome of the next two sets of equations as presented below.

$$\varphi^\tau \int_{\tau/(2.667)} \int_{\varepsilon/\xi+\tau}^{1} (\tau^\theta + \varepsilon) \left[(2.667)^\tau \psi(2\theta_\varepsilon) \cos \theta^2\right] d\psi d\theta \tag{9}$$

$$\varphi^\tau \int_{\tau/(2.667)} \int_{\varepsilon/\xi+\tau}^{1} (\tau^\theta + \varepsilon) \left[(2.667)^\tau \psi(2_\varepsilon) \cos \theta\right] d\psi d\theta \tag{10}$$

Now to verify the coefficient ψ^τ for complexity within the flow of gas through the pipe of this cylindrical object. Keep in mind that Elliott H. Lieb, Jan Philip Solovej, Robert Seiringer, Jakob Yngvason, (2005) came up with a way to solve for its limitational boundaries within a given functions coefficient [5]. We are now able to see the velocity when gas is tightly condensed and then released which can be thoroughly scrutinized from the objects shape per se. This all starts on the adjacent side of the given object since gas has the most self-contained matter in the center due to its density and naturally disperses from a bottom to top scenario once contained.

$$\varphi^\tau \int_{\tau/(2.667)} \int_{\varepsilon/\xi+\tau}^{1} 2cos\theta_{\tau(\varepsilon)} + (2.667) \left(\frac{2.667}{1} cos \frac{1}{2.667}\right) d\psi d\theta \tag{11}$$

$$\varphi^\tau \int_{\tau/(2.667)} \int_{\varepsilon/\xi+\tau}^{1} 2cos\theta_{\tau(\varepsilon)} 2.667 + (-2.372) d\psi d\theta \tag{12}$$

$$\varphi^\tau \int_{\tau/(2.667)} \int_{\varepsilon/\xi+\tau}^{1} cos_{\tau(\varepsilon)} 7.112\theta + (-2.372) d\psi d\theta \tag{13}$$

The stable function for the speed of gas is being released. The three previous equations are showing us that the force τ acting on the adjacent side of the cylinder cos is doing exactly as described in our second theorem. The coefficient ψ^{τ} is proving that the constant φ is providing the continuum function with precise results. Expression (14) is showing that this is true.

$$\varphi^{\tau}\int_{\tau/(2.667)}\int_{\varepsilon/\xi+\tau}^{1} cos_{\tau(\varepsilon)}4.740\theta d\psi d\theta \tag{14}$$

We can see that 4.740 is the stable average function for $F = ma$ at which gas travels out of the cylindrical pipe and into the atmosphere. We have found the true continuum function for this cylindrical object for expression (3) and have proven that ξ of gas particles is constant in proportion to φ and through its own force τ acting on this object contemporarily in accordance to its shape. Now we can see how this continuum disperses gas particles at the constant rate of 4.740 which is acted out per Π of its whole amount and is scattered throughout this object based on its own shape.

Corollary 1. At this point, we should start to understand how the shape of an object determines the dispersion of gas particles. By using the base function given in expression (3), we will from here on out have a generalized understanding for other objects of different shapes and how we can apply a specific function using the equation $F = ma$ for the element of gas. We will be talking about this in the next application. But instead of having a function of force already given to us, we will instead be using the equation of force to find its original function of force based on the objects shape.

3 Using the Equation of Force with the Gaussian Integral Equation and Green's Function to Explain a Spherical Shaped Object

We will begin by evaluating the homogeneous function. Since we don't have the equation of force given to us, we have to identify what constitutes $F = ma$ by using the combinations of green's function and the gaussian integral equation. We have explained this precisely and with articulation in our first application.

Proposition 2. If we allow the function seen in expression (3) to apply to this application like we showed in a similar manner in the first example with expression (4), we will have to take note of Roddam Narasimha's (1962) method of understanding the free flow within a vacuum bubble through the use of the diffusion equation [6]. A vacuum bubble can be described as a sphere that accumulates gas, viscosity travelling asymptotically at a definite velocity and growing linearly with time. This can be simply described as an inhomogeneous sphere. Applying Roddam Narasimha's method by way of differentiation to the next two equations shows the results of the forces acting on each other around this object.

$$f(\varphi x)\varphi y + \partial\tfrac{dx}{dy}(x\phi^2 \cdot y\phi^3) \sum_f \lim_{n\to\infty} \frac{\partial x^3}{\partial y^2} \sum_x \varphi^3 \left(\frac{x_2\phi}{y_2\phi}\right) - (x^2+y^2) + \phi^2 \tag{15}$$

$$f(\varphi_x) + (\varphi_y) - \partial \left\{ \frac{dx^2}{dy^2} \sum_f \lim_{n\to\infty} + f\left(\frac{x^2}{y^2}\right)\right\} \sum_f \phi + \varphi^{\frac{\varphi_2-\phi^2}{x_2+y_2}} = \sum_x \phi^{\varphi\,\frac{\phi+\varphi}{x-y}} \left(\frac{dx_2}{dy_2}\right) \tag{16}$$

Now that we understand how we differentiated f over the x coordinate of ϕ, we have to now find the y coordinate over the x coordinate with respect to f. And since we differentiated x with respect to y, y will give us the most accurate inhomogeneous forms of the spherical functions. Now we can see the transition of our limited force φ with respect to f and x of y. This makes it easier for us to see the force of φ acting on the x coordinate which is now clearly seen bounded by ϕ.

Theorem 3. In simplistic terms, we have located the force φ acting on the horizontal x area of mass which was formed by its viscosity. This eventually created gas on the x coordinate within this object followed by its continued acceleration of ϕ around the shape of this sphere. This method can only be applied to objects of a spherical shape, bounded by an inhomogeneous function and of course when there is a continuous scatter of gas particles. While this idea is now well understood, the results are as followed for the next three equations below.

$$f((\varphi^2)x) + (y) + \partial^{x_2^2}_{y^2}\mathrm{C}\left((\phi_2) + \sum_x\right) \frac{dx_2}{dy_2} \cdot \partial^{x_2}_{y_2}\mathrm{C} + f\left(\lim_{n\to\infty}\right) \sum_y (\phi x + \phi y) + \partial^x_y \mathrm{C} \tag{17}$$

$$f(\varphi x) + (\phi y) = d^x_y\mathrm{C}\left(\phi\left(\sum_x\right) + \sum_y\right) + \frac{dx}{dy}\partial^x_y\mathrm{C}\left(f(\phi x) + (\varphi y)\right) \tag{18}$$

$$f\left(\varphi x(\phi y)\right) = \partial\frac{\varphi x}{\phi y}\left(\sum_x\left(\sum_y\right)\right)\partial^x_y\mathrm{C} + f(\phi x(\varphi y)) \tag{19}$$

Corollary 2. We can accurately see the formation of transitional functions because φ is clearly shown acting on the x coordinate which has gas revolving around that fixed location within this spherical shaped figure due to ϕ. But since this spherical figure is inhomogeneous, we want to adopt Sadri Hassani's (2013) understandings of verifying groups of representations that are irreducible within an object such as what the next two equations explain thoroughly because we cannot reduce an asymptotically complex sphere [7]. The results are as follows.

$$= \partial \frac{\varphi x}{\phi y} \sum_{x} = \underbrace{\partial_y^x \mathrm{C} \sum_{y} f(\phi x(\varphi y))}_{f(\varphi x(\phi y))} \tag{20}$$

$$= \partial \frac{\varphi x}{\phi y} \sum_{y} = \underbrace{\partial_y^x \mathrm{C} \sum_{x} f\left(\varphi x(\phi y)\right)}_{f(\phi x(\varphi y))} \tag{21}$$

Since we have verified what our function of force is for this spherical figure, the equation $F = ma$ is equivalent to our verifiable function $\varphi = x\phi$. We can safely describe the function of force acting on this circular shaped sphere as presented in the equation below.

$$\partial \frac{\varphi x}{\phi y} \sum_{x} = \underbrace{\partial_y^x \mathrm{C} \sum_{y} f(\phi x(\varphi y))}_{f(\varphi x(\phi y))} + \partial \frac{\varphi x}{\phi y} \sum_{y} = \underbrace{\partial_y^x \mathrm{C} \sum_{x} f\left(\varphi x(\phi y)\right)}_{f(\phi x(\varphi y))} \tag{22}$$

So now we can clearly see the function of force acting out on this spherical figure. We have described this figure as a vacuum bubble because it shares a similar purpose as the diffusion equation does. But like we mentioned previously, we used the same kind of method as when we were describing the cylindrical object but instead of the function of force already given to us, we had to verify it for ourselves. We of course, still used the Gaussian integral equation combined with green's function to explain this spherical figure based on its shape but because we wanted to explain the function of force within a sphere, we had to borrow the methods of Narasimha's and Sadri Hassani's mathematical understandings of the diffusion equation and groups of inhomogeneous representation sets to precisely verify the function of force in a spherical shaped object.

4 Using the Equation of Force with the Gaussian Integral Equation and Green's Function to Explain a Cone Shaped Object

The two applications above showed us the similar relationships that the equation of force can have on an object based on its shape when using the gaussian integral equation and green's function combined. But what if we have the notation of force and not for mass and acceleration within a disproportionately small object? By using the simplified combination of force expressed with the gaussian integral equation and green's function shown in expression (3), we can easily find m and a of $F = ma$ with the help of Juan and Fernandez's (1987) method of analyzing the kinetic energy of thermal energies through hydrodynamical bodies [8]. When we apply his method to a disproportionately small object, we noticed that it's easier to analyze the object because its perimeter is not as prodigious in size.

Proposition 3. If we focus our attention on the flat circular side of a small cone shaped object for example. We already know that the acceleration will be around the cos area of the object because we will be using the solid angle calculation which allows us to focus on the solid area of a cone instead of its angles and this idea was first sought out by, S. Pommé's (2015) applications of solid areas within cone shaped objects [9]. The shape of the accelerating area will also be very easy to distinguish because it's obvious that the bottom of a cones surface is flat and round. So now that we know the force and acceleration based on this objects shape, let us apply this to our equation of force shown in expression (3) as well as S. Pommé's mathematical method of figuring out the flat area of a cone. We will evaluate the arbitrary force Ψ over the given formula $uv^2t(x^2)+y$ which will be expressed using green's function and Gaussian's integral equation combined with S. Pommé's method of evaluating the flat surface in a cone shaped figure followed by the already known area of acceleration in the cone. This analysis will allow us to express the volume of gas and its mass of this cone shaped object. The following two equation are as follows.

$$\frac{\partial u^2}{\partial v^2} = (\Psi) \cdot \sum_{t=1}^{\infty} x^2 + y + (uv^2)\cos t \tag{23}$$

$$\frac{\partial u^2}{\partial v^2} = u^2 + v\sum_{t=1}^{\infty}(\cos t) + \left(\frac{x^2}{y^2}\right)\Psi(u)v^t \tag{24}$$

We can see that over a given time, the cos area is changing its speed of acceleration rapidly due to Ψ acting on that area. It's becoming clear that S. Pommé's method of evaluating the flat surface in a cone is formulating the given function of mass as, $(u+v)^2$ and the volume, $[t+(x)y]^2$ which is producing quantities of gas that is expanding over a given time within the area. And you can see where we analyzed the small circulation of gas at the base of the cone which is gradually building up in the next two equations.

$$\frac{\partial u^2}{\partial v^2} = (u+v)^2 \sum_{t=1}^{\infty} [t+(x)y]^2\,\Psi + (\cos t) \tag{25}$$

$$\frac{\partial u^2}{\partial v^2} = (x+y)^t \sum_{t=1}^{\infty} \Psi + (\cos t)u + v^2 \tag{26}$$

Theorem 4. Since we have analyzed the volumes of matter being produced within the area of the gas buildup, we need to verify the level at which gassed stopped building up overtime. This means that the shape of this gas will not be the same shape of this cone if the gas did not build up completely to the top. We can quickly analyze this using Andrew Dienstfrey's and Jingfang Huang's (2005) application for quickly evaluating and explaining Representation integrals of elliptic functions by using Weierstrass elliptic formulas [10]. This is a similar method to what we described in our second applications corollary but instead of explaining the function of the force, we have to explain the volume and mass of the gass with the help of the notations for force and acceleration. We can see Andrew Dienstfrey's and Jingfang Huang's method working precisely in expression (27) and (28) below.

$$\frac{du}{dv} + \begin{cases} \frac{\partial u^2}{\partial v^2} = (x+y)^t \sum_{t=1}^{\infty} \Psi + (\cos t)u + v^2 \\ \end{cases} \tag{27}$$

$$\frac{du}{dv} = \begin{cases} (\partial u + \partial v)^2 \sum_{t=1}^{\infty} \Psi + (\cos t)x + y^t \\ \end{cases} \tag{28}$$

Lucky for us, the results show that the expansion of mass is due to the volumes of gas that has taken full shape of this cone because Andrew Dienstfrey's and Jingfang Huang's method explains that if your computed derivation has stayed constant throughout Weierstrass elliptic formula which is presented in a similar manner above for this application, then our formula should have a perfect equation in the formation of a circular lattice generator of a solid object. This means that our continuous volumes, $[t+(x)y]^2$ of expanding gas is influencing its mass, $(u+v)^2$ by projecting and forming each point on all sides of this cone based object. This proves that our already given force, Ψ allowed the gas contained at the bottom of the cone to expand and accelerate to the top of the cone with the verified volumes of expanding gas in relation to its verified expanding mass that it's acquiring. This confirmation can be seen in the last equation below.

$$\frac{du}{dv} = (\partial u + \partial v)^2 \sum_{t=1}^{\infty} \Psi + (\cos t)x + y^t \tag{29}$$

5 Conclusion

Hopefully I sparked some interest in the reader about the one of many natural elements in the world that we discussed in this topic today which is the dispersion of gas and how we can use the functions $F = ma$, Gaussian Integral Equation and Green's function to discover force, mass and acceleration of an object based on how the gas manifests within the shape of the object. I presented three applications where I explain this process in depth step by step so you the reader will have a thorough or generalized understanding of how the mathematical methods used in this application work. My goal here is to bring new insight for the mathematics community and scientific community on how we can expand our understandings of the one of many elements called gas and how the dispersed particles of gas affects its own shape, its function of force, its mass and its acceleration in the object. I hope the reader was able to walk away from this article with some of the information that I have provided throughout the three applications presented and to carry this acquired knowledge for their own research benefits. Thank you very much for taking your time to read this article and am looking forward to the new breakthroughs that the scientific community will discover in the very near future.

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I want to thank Jacob Hermann for discovering $F = ma$ back in 1716 because without this equation, this article may have never been created. So I again thank Jacob Hermann for his magnificent discovery.

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