FEDERAL UNIVERSITY OF PETROLEUM RESOURCES, EFFURUN, DELTA STATE, NIGERIA

9th

In the series of Inaugural Lectures of the
Federal University of Petroleum Resources, Effurun
Delivered by

Prof. EnaibeAroghene Edison
BSc (Hons), MSc, PhD
MNAMP, MNIP, MIAS, MIRDI
Professor of Theoretical Physics

TOPIC:

PHYSICS AND THE THEORY OF VIBRATION – THE CAUSE OF CREATION AND EXISTENCE

$$v^2 = \phi\left\{\frac{2}{r} - \frac{1}{a} + (cos\mu - 1)^2 tan^2\beta + (cos\varphi - 1)^2 tan^2\alpha\right\}$$

$$y = A\{\sqrt{\xi} + \xi cos(kr - \omega t - \varepsilon)\}$$

FEDERAL UNIVERSITY OF PETROLEUM RESOURCES,
PMB 1221, EFFURUN, DELTA STATE.

9th In the Series of Inaugural Lectures of the
Federal University of Petroleum Resources, Effurun
DELIVERED BY

Prof. EnaibeAroghene Edison
BSc (Hons), MSc, PhD, MNAMP, MNIP, MIAS, MIRDI
Professor of Theoretical Physics

WEDNESDAY 11th DECEMBER, 2024

FUPRE ANTHEM

1. Federal University of Petroleum Resources
Our Motto Excellence and Relevance is our Strength
We Are First in Africa For the Oil and Gas Sector
We Provide a World Class Education

Chorus

All Hail Fupre
We Are the Best

All Hail Fupre
We Are the Best

With God We Build "Excellence and Relevance"

We Are Fuprites
We Are the Best

We Are Fuprites
We Are the Best

2. Institution of Learning Service and Consultancy
Where We Drill the mind to Mine the Soil
We Engage in Great Research to Promote Our Main Vision
We Are One Great Citadel of Learning

FEDERAL UNIVERSITY OF PETROLEUM RESOURCES,
PMB 1221, EFFURUN, DELTA STATE.

ISSN:

Printed and published by:

Egbosun Printing Press, Orerokpe.

Phone number: 07089635163 / 07066952631

DEDICATION

This Inaugural Lecture is dedicated to the memory of my Late Father and Mother: Chief EnaibeAmerikaOjuwete and Mrs Christiana UkpemuekiEnaibe. Also, to the memory of my late sisters and brothers: Miss EnaibeOghenenyore, Mr.EnaibeEmovigho Lucky, Mr.EnaibeEjuvwevwo Austin and Dr EnaibeUfuophu Patience, I dedicate this lecture.

My profound gratitude goes to my academic mentor, erudite scholar of high repute, late Professor John OvuezirieAkerainoIdiodi, under his academic custody I have had the benefit and opportunity of learning so much and becoming what I am today. Your sudden departure from this earth will always remain in my memory. The custodian of Theoretical Physics / Mathematical Physics in Nigeria is gone.

PROTOCOL

THE VICE CHANCELLOR, FUPRE

DEPUTY VICE CHANCELLOR (ADMINISTRATION)

DEPUTY VICE CHANCELLOR (ACADEMIC)

THE REGISTRAR

THE BURSAR

THE UNIVERSITY LIBRARIAN

MEMBERS OF UNIVERSITY GOVERNING COUNCIL

DEANS OF COLLEGES

PROFESSORS AND MEMBERS OF SENATE

DIRECTORS OF INSTITUTES AND UNITS

HEADS OF DEPARTMENT

MEMBERS OF THE ACADEMIA

ROYAL FATHERS AND CHIEFS PRESENT

MY LORDS SPIRITUAL AND TEMPORAL

THE TOWN AND GOWN

DISTINGUISHED INVITED GUESTS

GREAT STUDENTS OF FUPRE

GENTLEMEN OF THE PRESS

LADIES AND GENTLEMEN

PHYSICS AND THE THEORY OF VIBRATION – THE CAUSE OF CREATION AND EXISTENCE

1.0 INTRODUCTION

In this lecture, we want to show howphysics and the theory of vibration, is responsible for the creation and existence of the universe, and we shall apply the theory of Vibration to studythe biomechanics of vector-borne human infectious diseases, for instance, HIV/AIDS.

1.1 CREATION MYTH

Creation myth is a supernatural mytho-religious explanation that describes the beginnings of the existence of humanity, earth, life, and the universe (cosmogony), usually it is a deliberate act of creation by one or more deities (**https.//www2.nau.edu>crtm**). Myth is an imaginary or fictitious thing or person, an unproved or false collective belief that is used to justify a social institution. The creation myth, therefore,is the symbolic narrative of the

beginning of the world as understood by a particular community (**https://www.britannica.com>topic**).

1.2 Christian Religion Ideology on Creation and Existence

In the holy Bible, the book of Christian religion, all Christians believe that God almighty is the creator and in his infinite mercy caused the existence of the universe. At the start of creation God brings order to chaos by **speaking aloud** and bringing all things into existence **(https: //www.hillcrest.bham.sch.uk>…;https://www.k.state.edu>english233**).

1.3 Islam Religion Ideology on Creation and Existence

In the holy Quran, the book of Islam religion, says the heavens and the earth were initially interwoven and Allah with unlimited power and authority, **commanded** things to come into existence (**https://www.bbc.co.uk>revision**). The heavens and the earth were joined together as one unit, before they were cloved asunder". Following this **big explosion**, Allah turned to the sky, and it had been (as) smoke. He **said** to it and to the earth: Come together, willingly or

unwillingly. Thus, from this the creation of the world came into existence (**https://www2.nau.edu/~gaud/bio301/...**).

1.4 Egyptian Ideology on Creation and Existence

In the holy Torah, the book of Egyptian mythology, Ra (sun god) was believed to have created the universe and all forms of life by **calling** them into existence by **uttering sacred names** (Geb, Nut and Shu)(**https://www.bxscience.edu>...**). The story also begins with Ra alone in Nun (the primordial waters) wanted to create something, so **hespoke words** that made light appear and then used **hisvoice** to create Shu (air) and Tefnut (moisture) (**https://jakadatoursegypt.c….**).

1.5 Hindus Religion Ideology on Creation and Existence

In the holy Bhagavad Gita, the book of Hare Krishna's consciousness, it was presented that the creation of the cosmos resulted when God almighty (Brahma) **exploded itself** (**https://www.bhagavadgitasummary.com>...**). God almighty was that singularity that existed at the time of the explosion. The book also says;

Krishna expands in the form of Maha vishnu who then generates the entire universe through **hisbreathing(https://www.linkedin.com>pulse**).

1.6 Echankar Religion Ideology on Creation and Existence

According to Eckankar religion, Eckists believe that creation was as a result of **sound current** which flows out of Sugmad into lower dimension. Sugmad is the endless source from which all things or all forms were created (**https://en.wikipedia.org>wiki>E...**).

1.7 The Yoruba Ideology on Creation and Existence

According to Yoruba mythology, Olodumare, the Supreme God, originally delegated Orisha Obatala (one of the deities) to perform the task of creation. The myth holds that Obatala **ordered** a five-toed hen to scratch and scatter the earth with her toes across the surface of the primordial waters (**Vega, 2001**). Thereafter, Olorun **breathed** into the imperfect figures fashioned by Obatala who

became drunk during the process of creation. (**https://www.gateway-africa.com...**).

1.8 The Igbo Ideology on Creation and Existence

According to Igbo mythology, it was Chineke that is responsible for creation. Chi was one of the forces and it is a male, and the second one is Eke a female force. The universe rises out of a **loud explosion** from the secrete chambers of Chi when it was opened by Eke (**https://punchng.com>is-g...**) without the consent of Chi.

1.9The Fulani Creation Myth on Creation and Existence

In the beginning, there was a huge drop of milk, and from the **shattereddrop of milk** as it fell down, Doondari, the fearless supreme God, came and created stone. The stone created iron, iron created fire, and the fire created water, and water created air (**https://www.pulse.ng>food-travel**).

1.10Astrophysics Ideology on Creation and Existence

According to Astrophysics, the universe began, with every speck of its energy interwoven into a very tiny point. This extremely dense point **exploded** with unimaginable force, thereby creating matter and propelling it outward to make the billions of galaxies of our vast universe (**https://www.pbs.org>cosmo-frame)**. Astrophysicists dubbed this titanic explosion the big bang. The big bang is a physical theory that describes how the universe gradually and continuously expanded from an initial high density and temperature (**https://www.en.wikipadia.org>wiki>Bi…**).

2.0 SUMMARY OF THE CAUSES OF CREATION AND EXISTENCE

Generally, whether creation and existence were as a result of:

- The **spoken word of** God from Christian religion,
- The **commandment** of Allah from Islam religion,
- The **uttering sacred names** and **spoken words** of Ra according toEgyptian Ideology,

- The **explosion** and **breath** ofHare Krishna from Hindus religion
- The **sound current** fromSugmad according to Echankar religion
- The **order** and **breath** of Orisha Obatala and Olorun according to Yoruba mythology
- The **loud explosion** from the secrete chambers of Chineke according to Igbo ideology
- The **shattereddrop of milk**used by Doondari according to Fulani mythology
- The **loud explosion** ofextremely dense pointaccording to Astrophysics

There is one substantial concept, correlation or significant points of convergence between these myths and religious beliefs, and that is, the concept of **sound wave – vibration**.

The spoken words, uttering sacred names, commanding, explosion, etc, all these processes which led to the creation and existence of matterproduced sound wave, and in physics **soundwave**is a form of **vibration**. A sound wave is a longitudinal wave in which the particles of the medium move in a direction that is parallel to the direction that the wave moves. Hence, creation and existence of all kinds

resulted from longitudinal wave which was initially set into motion by the original Creator. Therefore, it should not be a surprise that the ideas (thoughts) and ideals (principles) of Humanity and those of the Creator are always parallel and different.

The propagation of **sound waves** from whoever that is the creator, obeys the inverse square law, that is, thepropagating sound wave losses energy, changes formation and quality as it moves away from the source (origin). Consequent upon this, for anything to exists, therefore, it must possess the initial creative vibration, since **vibration** is the original cause of the universe and the existence of all kinds as agreed and accepted by all mytho-religious bodies.

2.1 Relevance of Vibration to University Academic Programmes

Thus,we can affirm that it is the initial creative vibration from whoever the Creator may be,that is responsible for the following university academic programmes:

- Different variety of plants and animals, their chemical compositions and functions which you study in Botany and Zoology.

- Different chemical composition of atoms, molecules and elements which you study in various branches of Chemistry and Biochemistry.
- Phonon and electronic vibrations in metals, structural and mechanical properties of materials which you study in various branches of Applied mathematics, Materials Science and Metallurgy, Physics and Engineering.
- The shape, gravitational and magnetic fields, internal structure and composition, and the surficial processes of the earth, which you study in Geology and Geophysics.
- Differences in the mind, character and behaviour of people which you study in Psychology (mindset) and Parapsychology (psychic phenomenon).
- The two-dimensional 2D transverse wave generated by the pulsating human heart, measured by electrocardiograph ECG, which you study in Medical physics and Radiology.
- Human biomechanical dynamicswhich you study inBiophysics, Anatomy, Medicine and Surgery.

- Different types of ailmentswhich you study anddiagnose by a Medical labouratory Scientist.

How Physics interprets Creation and Existence

Physics is a scientific discipline that seeks to construct and experimentally test theories of the physical universe as regard the ***initial vibration***that led to the cause and existence of matter of all kinds. These theories vary in their scope and can be generally organized into several distinct branches:

Table 1. Shows the various branches of Physics

Physics	Classical Mechanics	Relativistic Mechanics
	Quantum Mechanics	Quantum Field Theory

Table 2. Shows the composition of classical mechanics

Classical Mechanics				
Statics	Dynamics	Kinematics	Continuum Mechanics (Include fluid Mechanics)	Statistical Mechanics

2.3 QUANTUM FIELD THEORY (QFT)

In theoretical physics, quantum field theory (QFT) is a theoretical framework that combines classical field theory, special relativity and quantum mechanics. QFT has successfully explained a wide variety of physical phenomena, including electromagnetic force, the weak interaction, the strong interaction and gravity. It

explains the behaviour of subatomic particles through a variety of force fields (**Hobson, 2013**).

Table 3. Shows the composition of Quantum Field Theory (QFT)

Quantum Field Theory (QFT)		
Classical field theory It predicts how one or more fields in physics interact with matter.	**Special relativity** A scientific theory that concerns the relationship between space and time.	**Quantum mechanics** Refers to the properties of the wave function of matter under the exchange of two particles

3.0 APPLICATION OF VIBRATION TO THE BIOMECHANICS OF VECTOR-BORNE HUMAN INFECTIOUS DISEASES

In this technical session, we want to show how the theory of vibration can be applied tothebiomechanical dynamics of Vector Borne Human Infectious Disease – HIV/AIDS (Human Immuno-deficiency Virus / Acquired Immuno-deficiency Syndrome).

3.1 Background of the Study and Assumptions

The activity of the Human Immuno-deficiency Virus (HIV) which is resident within the human system is parasitic in nature and the conditions are synonymous with the coexistence of the parasitic plant, Mistletoe (*Viscum album*) with any other plant. In Urhobo language this plant is called Abadi-muerha or Adadamu, in Yoruba language it is called Afomo-Obi or Isana-Ale, the plant is called Mai-Tsintsinta in Hausa language, while in Igbo language it is called Utazi.

- In this study, we consider the human vibration as the ‘host wave’, while the HIV vibration as the “parasitic wave”.

- The human system has its own independent vibration. It is the human cyclic heart contraction that reproduces theoriginal primeval human vibration.

- If HIV exists it must have its own peculiar vibration which must be independent of the Human vibration, the same way human has its own vibration.
- The HIV transforms the human vibration to become equal to its own form and quality,the way the Mistletoe plant transforms the vibratory characteristics of the host plant to its own form and quality.
- The HIV saps the energy and nutritive substances of the resident host- human system, the same way the Mistletoe plant saps the energy and nutritive substances of the resident host plant.
- The HIV dies off the moment the resident host (human) dies, since the HIV parasite does not have the requirements for independent sustenance and existence outside the human or host system.
- The Mistletoe plant also withers and gradually dies off once the resident host plant is finally dead, since there are no more nutritive substances left with the host plant to be sapped by the parasitic plant. Again, the Mistletoe plant does not have the requirements to sustain independent existence outside the host system.
- The fact that the HIV kills slowly with time shows that the vibratory characteristics of HIV, and the human vibratory characteristics are initially

incoherent, and the basic characteristics of the Human vibration are initially greater than those of the HIV.

- The vibratory characteristics of HIV are independent of intrinsic variables such as, the number, size, mass and of course mutation behaviour.
- Since the immune system of AIDS patient is almost zero, the measured vibratory characteristics in infected patient shall depend entirely on the vibrating property of the HIV only, since all the active vibratory characteristics of the Human blood would have been completely eroded.
- Irrespective of the occupation of the HIV in the human system, the vibratory characteristics is the same everywhere within the human system.
- The vibratory characteristics of HIV cannot be directly measured since it does not have its own independent existence outside the human system. As a result, the wave function of HIV can only be deductively measured.
- We canassume that the vibrating characteristics of human blood that is free from HIV/AIDS infection is measured by microcapillary viscometer, and we obtain four independent variables: (i) amplitude, a(ii) phase angle, ε (iii) angular frequency, $n$and(iv) wave number, k. Note that in a normal human system a, ε, n and k are assumed to be constant with time, except for some fluctuating

factors, for instance illness, which of course can only alter them slightly and temporary.

- Also, we assume that the vibrating characteristics of blood in HIV/AIDS infected person, whose immune count rate is very low, is measured by microcapillary viscometer,and we obtain four independent variables: (i) amplitude, b (ii) phase angle, ε' (iii) angular frequency, $n'$and (iv) wave number,k'.

- The human macro-vascular blood circulating vessels such as the arteries, veins and the capillaries, though they are flexible in nature, have the symmetry of a cylindrical coordinate system and the coordinates of the vessels can be describedby$r$, ϕ, z.

- If the vibration of any particular thing is known then, it can be destroyed by anti-vibratory component.

3.2 Mathematical theory of the Human vibration and HIV vibration

Having presented the similarity and correlative activity between the HIV and the parasitic plant on the human as host, we can then use the information to model the biomechanical dynamics of HIV/AIDS in the human viscoelastic system. Models are used to address an ever-expanding number of diseases and to explore the importance of biological and ecological details on disease transmission.

Also, models can be used to discuss the dynamics of diseases and possible treatments. Modeling of infectious diseases is a tool to study the mechanism by which diseases occur, spread and become a pandemic.

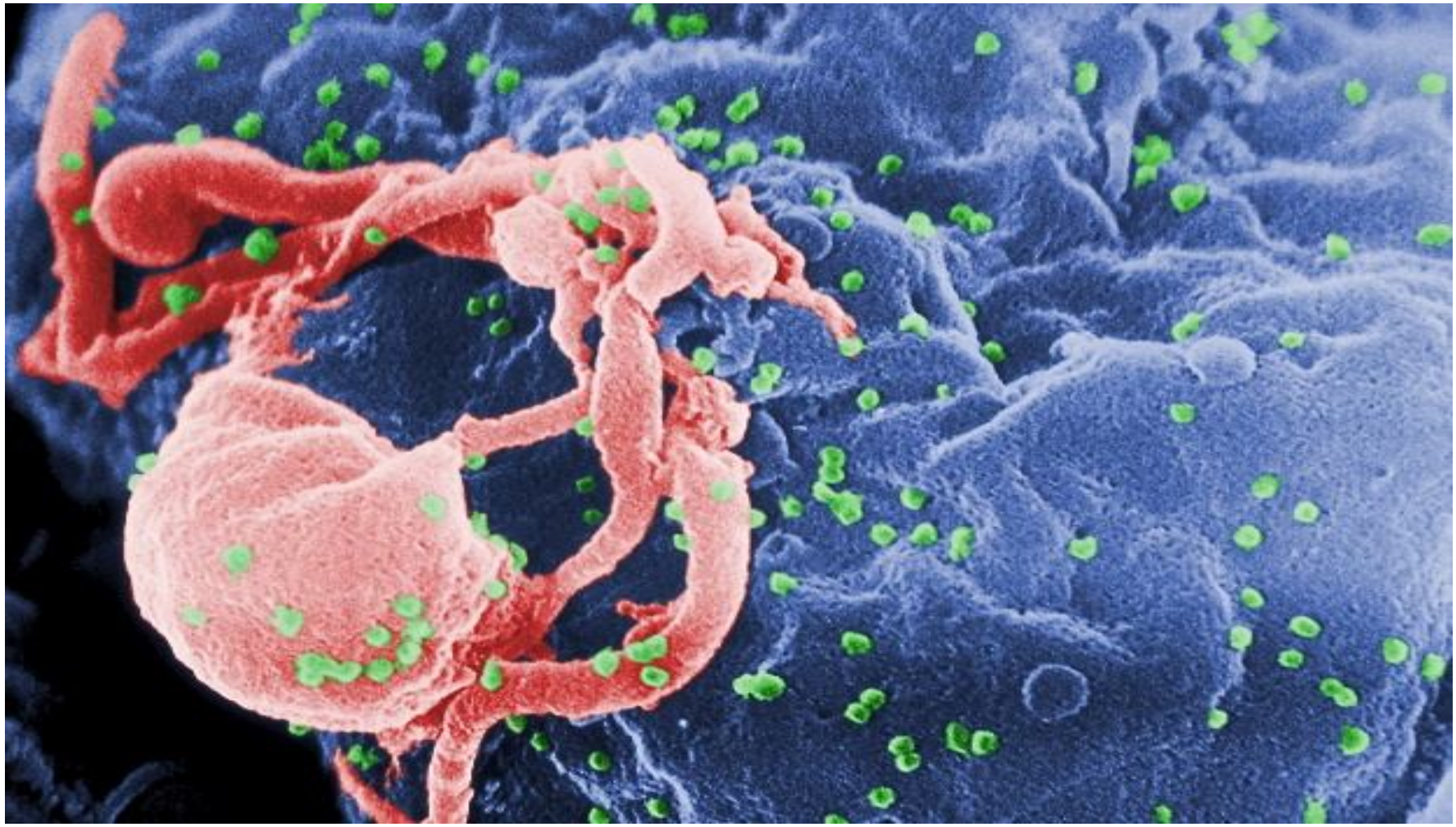

Fig. 1. Scanning Electron micrograph of HIV-1 in the human blood

(UNIADS, 2011 ; Morgan et al., 2002)

Consider the human vibration which is the 'host wave' and the HIV vibration which is the "parasitic wave" to be respectively given by the following equations:

$$y_1(\vec{r},t) = a\cos\left(\vec{k}.\vec{r} - nt - \varepsilon\right) \qquad (1)$$

$$y_2(\vec{r},t) = b\lambda\cos\left(\vec{k}'\lambda.\vec{r} - n'\lambda t - \varepsilon'\lambda\right) \qquad (2)$$

When we superpose the parasitic vibration on the human vibration, we realize:

$$y(\vec{r},t) = \sqrt{(a^2 - b^2\lambda^2) - 2(a - b\lambda)^2\cos((n - n'\lambda)t - (\varepsilon - \varepsilon'\lambda))} \times$$

$$\cos\left(\vec{k}_c.\vec{r} - (n - n'\lambda)t - E(t)\right) \qquad (3)$$

where: $$E(t) = \tan^{-1}\left(\frac{a\sin\varepsilon + b\lambda\sin(\varepsilon'\lambda - (n - n'\lambda)t)}{a\cos\varepsilon + b\lambda\cos(\varepsilon'\lambda - (n - n'\lambda)t)}\right)$$

Equation (3) is the celebrated Constitutive Carrier Wave (CCW) necessary for our study. It governs the biomechanical dynamics of the coexistence of HIV parasitic vibrationand the human vibration.

3.5ThePressure-force law obeyed by the CCWusing the 2D Navier-Stokes Equations

The two – dimensional 2D Navier-Stokes equations (NSE) are the fundamental partial differentials equations that describe the flow of incompressible fluids. Using the rate of stress and rate of strain tensors, the components of a viscous force f in the human blood circulating system are given by the NSE (**http://www.claymath.org/...**) as:

$$\rho\left(\frac{\partial u}{\partial t} + u.\nabla u\right) = \nabla.\sigma + f \qquad (4)$$

whereρ denotes the density of the fluid and is equivalent to mass, the term in the bracket represents the acceleration and$u$is the fluid velocity, and $\nabla\cdot\sigma + f$ is the total force, with $\nabla\cdot\sigma$ being the shear stress and$f$being all other forces. Navier-Stokes explicitly models change in the directional velocity using four components:

$$\rho\left(\frac{\partial u}{\partial t} + u.\nabla u\right) = -\nabla p + \eta\nabla^2 u + f \qquad (5)$$

where p is pressure and η is dynamic viscosity. The different terms correspond to: (i) the inertial forces (ii), pressure forces (iii), viscous forces and (iv), external forces applied to the fluid. In unidirectional flows such as blood.Here, $u$and $p$are the time-averaged fluid velocity and pressure respectivelyand ∇ indicates the gradientdifferential operator(**Thurston, 1975 ;Edison et al., 2017**).The Navier-Stokes equations are always solved together with the continuity equation (**Batchelor, 1967; Bakker, 2012**):

$$\frac{\partial \rho}{\partial t} + \nabla.(\rho u) = 0 \qquad (6)$$

Let us consider the irrotational Navier-Stokes equations in cylindrical coordinate system. In cylindrical coordinate system the continuity equation is of the form:

$$\left(\frac{\partial U_r}{\partial r} + \frac{U_r}{r} + \frac{1}{r}\frac{\partial U_\phi}{\partial \phi} + \frac{\partial U_z}{\partial z}\right) = 0 \qquad (7)$$

In cylindrical coordinate system, the radial and the angular pressure in the Navier-StokesNS representation are respectively given by:

$$\rho\left\{\frac{\partial U_r}{\partial t}+\left(U_r\frac{\partial U_r}{\partial r}+\frac{U_\phi}{r}\frac{\partial U_r}{\partial \phi}+U_z\frac{\partial U_z}{\partial z}-\frac{U_\phi^2}{r}\right)\right\}=-\frac{\partial P}{\partial r}+$$

$$\eta\left(\frac{\partial^2 U_r}{\partial r^2}+\frac{1}{r}\frac{\partial U_r}{\partial r}+\frac{1}{r^2}\frac{\partial^2 U_r}{\partial \phi^2}-\frac{U_r}{r^2}+\frac{\partial^2 U_r}{\partial z^2}-\frac{2}{r^2}\frac{\partial U_\phi}{\partial \phi}\right)+F_r \qquad (8)$$

$$\rho\left\{\frac{\partial U_\phi}{\partial t}+\left(U_r\frac{\partial U_\phi}{\partial r}+\frac{U_r U_\phi}{r}+\frac{U_\phi}{r}\frac{\partial U_\phi}{\partial \phi}+U_z\frac{\partial U_z}{\partial z}\right)\right\}=-\frac{1}{r}\frac{\partial P}{\partial \phi}+$$

$$\eta\left(\frac{\partial^2 U_\phi}{\partial r^2}+\frac{1}{r}\frac{\partial U_\phi}{\partial r}-\frac{U_\phi}{r^2}+\frac{1}{r^2}\frac{\partial^2 U_\phi}{\partial \phi^2}+\frac{\partial^2 U_\phi}{\partial z^2}+\frac{2}{r^2}\frac{\partial U_r}{\partial \phi}\right)+F_\phi \qquad (9)$$

Since our work is restricted to 2D we have to ignore the z- axes or assume that the motionof the CCW is constant with respect to the z- axes. All nonlinear terms in the Navier-Stokes equations vanish: the convective term $u.\nabla u = 0$ and also,we take the body forces$F_r = F_\phi = F_z = 0$. Consequent upon these assumptions, the Navier-Stokes equation becomes:

$$\rho\left(\frac{\partial u}{\partial t}\right) = -\nabla p + \eta\nabla^2 u + f \qquad (10)$$

The radial and azimuthal component of the pressure respectivelybecomes:

$$P_r = \frac{\partial P}{\partial r} = \eta\left(\frac{\partial^2 U_r}{\partial r^2} + \frac{1}{r}\frac{\partial U_r}{\partial r} + \frac{1}{r^2}\frac{\partial^2 U_r}{\partial \phi^2} - \frac{U_r}{r^2} - \frac{2}{r^2}\frac{\partial U_\phi}{\partial \phi}\right) - \rho\left(\frac{\partial U_r}{\partial t}\right) \qquad (11)$$

$$P_\phi = \frac{\partial P}{\partial \phi} = \eta\left(r\frac{\partial^2 U_\phi}{\partial r^2} + \frac{\partial U_\phi}{\partial r} - \frac{U_\phi}{r} + \frac{1}{r}\frac{\partial^2 U_\phi}{\partial \phi^2} + \frac{2}{r}\frac{\partial U_r}{\partial \phi}\right) - \rho\left(r\frac{\partial U_\phi}{\partial t}\right) \qquad (12)$$

The bulk pressure of the CCW as it propagates in the human blood circulating system is the addition of the radial pressure and the angular pressure. Hence,

$$\nabla P = \left(\frac{\partial P}{\partial r} + \frac{\partial P}{\partial \phi}\right) \qquad (13)$$

$$\nabla P = \eta\left(\frac{1}{r}\frac{\partial U_r}{\partial r} + \frac{\partial^2 U_r}{\partial r^2} + \frac{1}{r^2}\frac{\partial^2 U_r}{\partial \phi^2} - \frac{U_r}{r^2} - \frac{2}{r^2}\frac{\partial U_\phi}{\partial \phi} + r\frac{\partial^2 U_\phi}{\partial r^2} + \frac{\partial U_\phi}{\partial r} - \frac{U_\phi}{r} +\right.$$

$$\frac{1}{r}\frac{\partial^2 U_\phi}{\partial \phi^2} + \frac{2}{r}\frac{\partial U_r}{\partial \phi}\Bigg) - \rho\left(\frac{\partial U_r}{\partial t} + r\frac{\partial U_\phi}{\partial t}\right) \qquad (14)$$

There are two independent pressure gradientsassociated with the propagatingCCW in the Human blood circulating system, that is,the radial pressure and the angular pressure gradient respectively. However, if the pressure gradients are zero since they must balance each other, then $\nabla P = 0$, and (14) becomes:

$$\eta\left(\frac{1}{r}\frac{\partial U_r}{\partial r} + \frac{\partial^2 U_r}{\partial r^2} + \frac{1}{r^2}\frac{\partial^2 U_r}{\partial \phi^2} - \frac{U_r}{r^2} - \frac{2}{r^2}\frac{\partial U_\phi}{\partial \phi} + r\frac{\partial^2 U_\phi}{\partial r^2} + \frac{\partial U_\phi}{\partial r} - \frac{U_\phi}{r} + \right.$$

$$\left.\frac{1}{r}\frac{\partial^2 U_\phi}{\partial \phi^2} + \frac{2}{r}\frac{\partial U_r}{\partial \phi}\Bigg) - \rho\left(\frac{\partial U_r}{\partial t} + r\frac{\partial U_\phi}{\partial t}\right) = 0 \qquad (15)$$

3.7 Interception of EM wave with the 2D Navier-Stokes equations

We are going touse electromagnetic EM wave or radiation to intercept the pressure gradient equation (15) responsible for the propagation of the CCW in

the Human blood circulating system. The two-dimensional 2D electromagnetic EM radiation is of the form:

$$\vec{E} = 2E_0 \sin(\vec{k}.\vec{r} - \omega t - \theta) \qquad (16)$$

If we define the 2D wave number vector as:$\vec{k} = k_x i + k_y j$, and the position vector$\vec{r}$ of any quantum particle of the EM radiationwith 2D coordinate: $\vec{r} = cos\,\phi\, i + sin\,\phi\, j$, then the applied oscillating EM radiationbecomes:

$$\vec{E} = 2E_0\, sin[k.r(cos\,\phi + sin\,\phi) - \omega t - \theta] \qquad (17)$$

The displacement of $\vec{E}$comprises of the amplitude E_0, wave number$k$, radial distance r travelled by the EM wave, angular frequency ω, phase angle $\theta$and the total time of exposure t, where $\phi = \pi - (\varepsilon - \varepsilon'\lambda)$. By equating the EM wave with the two-dimensional 2D Navier-Stokes (15), then we realize:

$$\eta\left(r\frac{\partial^2 U}{\partial r^2} + \frac{\partial^2 U}{\partial r^2} + \frac{1}{r^2}\frac{\partial U}{\partial r} + \frac{1}{r}\frac{\partial U}{\partial r} + \frac{\partial U}{\partial r} + \frac{1}{r^2}\frac{\partial^2 U}{\partial \phi^2} + \frac{1}{r}\frac{\partial^2 U}{\partial \phi^2} -\right.$$

$$\frac{2}{r^2}\frac{\partial U}{\partial \phi} - \frac{1}{r^3}\frac{\partial U}{\partial \phi} + \frac{2}{r}\frac{\partial U}{\partial \phi}\Big) - \rho\left(\frac{\partial U}{\partial t} + r\frac{\partial U}{\partial t}\right) =$$

$$2E_0\, sin\{k.r(cos\,\phi + sin\,\phi) - \omega t - \theta\} \qquad (18)$$

Equation (18) is a secondorder inhomogeneous DEand the general solution comprises of the complementary functiony_c and particular integraly_p.

3.8 Complementary function CF or y_c of the 2D Navier-Stokes equations

To solve for the complementary function, we assume that the 2D Navier-Stokes equation (18) is equal to zero and after that we disengage the equation to become:

$$\eta\left(r\frac{\partial^2 U}{\partial r^2} + \frac{\partial^2 U}{\partial r^2} + \frac{1}{r^2}\frac{\partial U}{\partial r} + \frac{1}{r}\frac{\partial U}{\partial r} + \frac{\partial U}{\partial r}\right) +$$

$$\eta\left(\frac{1}{r^2}\frac{\partial^2 U}{\partial \phi^2} + \frac{1}{r}\frac{\partial^2 U}{\partial \phi^2} - \frac{2}{r^2}\frac{\partial U}{\partial \phi} - \frac{1}{r^3}\frac{\partial U}{\partial \phi} + \frac{2}{r}\frac{\partial U}{\partial \phi}\right) - \rho\left(\frac{\partial U}{\partial t} + r\frac{\partial U}{\partial t}\right) = 0 \qquad (19)$$

Let us assume that the solution to the second order DE (19) is of the form:

$$y_c = U = R(r)\theta(\phi)T(t) \qquad (20)$$

where$R$a function of only$r$, $\theta$is a function of only$\phi$and $T$is a function of only$t$.The variables in (19) are independent of one another,hence we can simply equate them separately to some constant say: ζ, $\xi$and ϑ respectively. Thus:

$$\eta\left(\frac{r}{R}\frac{d^2R}{dr^2}+\frac{1}{R}\frac{d^2R}{dr^2}+\frac{1}{Rr^2}\frac{dR}{dr}+\frac{1}{Rr}\frac{dR}{dr}+\frac{1}{R}\frac{dR}{dr}\right)=-\zeta \tag{21}$$

$$\eta\left(\frac{1}{r^2\theta}\frac{d^2\theta}{d\phi^2}+\frac{1}{r\theta}\frac{d^2\theta}{d\phi^2}+\frac{2}{r\theta}\frac{d\theta}{d\phi}-\frac{1}{r^3\theta}\frac{d\theta}{d\phi}-\frac{2}{r^2\theta}\frac{d\theta}{d\phi}\right)=-\xi \tag{22}$$

$$\rho\left(\frac{1}{T}\frac{dT}{dt}+\frac{r}{T}\frac{dT}{dt}\right)=\vartheta \tag{23}$$

After a lengthy algebra (21) which is a second order DE in Rhas asolution:

$$R=\frac{1}{\sqrt{(r+1)}}e^{\frac{1}{2r}}\left(C_1\,exp\left[\sqrt{\left(\frac{\zeta}{\eta(r+1)}-\left(\frac{3r^4+7r^3+11r^2+6r+1}{4(r^3+r^2)^2}\right)\right)r}\right]\right)+$$

$$\left\{C_2\, exp\left[-\sqrt{\left(\frac{\zeta}{\eta(r+1)}-\left(\frac{3r^4+7r^3+11r^2+6r+1}{4(r^3+r^2)^2}\right)\right)}\,r\right]\right\} \qquad (24)$$

Also, after a lengthy algebra (22) which is a second order DE in θ has a solution:

$$\theta = exp\left(-\left(\frac{2r^2-2r-1}{2(r^2+1)}\right)\phi\right) \times \left\{C_3\, cos\left(\frac{1}{2}\sqrt{\left(\frac{2r^2-2r-1}{(r^2+1)}\right)^2-4\left(\frac{r^2\xi}{\eta(r+1)}\right)}\right)\phi + C_4\, sin\left(\frac{1}{2}\sqrt{\left(\frac{2r^2-2r-1}{(r^2+1)}\right)^2-4\left(\frac{r^2\xi}{\eta(r+1)}\right)}\right)\phi\right\} \qquad (25)$$

Finally, after a lengthy algebra (23) which is a second order DE in T has a solution:

$$T = exp\left(\frac{\vartheta}{\rho(1+r)}t\right) + C_5 \tag{26}$$

When wesubstitute(24), (25) and (26) into (20). and use the requiredboundary conditions on the resulting equation, we realizethe complimentary solution y_c as:

$$y_c = \sqrt{(a^2 - b^2\lambda^2) - 2(a - b\lambda)^2\, cos((n - n'\lambda)t - (\varepsilon - \varepsilon'\lambda))} *$$

$$exp(-\phi) * \{-exp((n - n'\lambda)t)\} * cosh\left(\sqrt{(k - k'\lambda)r(cos\,\phi + sin\,\phi)r}\right) *$$

$$\left\{cos\left(\frac{1}{2}\sqrt{(1 - 4(k - k'\lambda)r)}\phi\right) sin\left(\frac{1}{2}\sqrt{(1 - 4(k - k'\lambda)r)}\phi\right)\right\} \tag{27}$$

3.9 Solution of the particular integralPIwhich is y_p

To solve for the particular integral, we assume a trial wave solution of the form:

$$y = e^{-\omega t} * \{A\, cos(k.r(cos\,\phi + sin\,\phi) - \omega t - \theta) +$$

$$B\,sin[k.r(cos\,\phi + sin\,\phi) - \omega t - \theta]\} \qquad (28)$$

After a lengthy and tedious algebra, the solution of the particular integral y_P is:

$$y_P = \frac{\eta k^2}{2(\rho^2\omega^3 - \rho\eta\omega^2 k^2)} E_0\, sin\{k.r(cos\,\phi + sin\,\phi) - \omega t - \theta\} -$$

$$\frac{(\eta k^2 - 2\rho\omega)}{2(\rho^2\omega^3 - \rho\eta\omega^2 k^2)} E_0\, cos\{k.r(cos\,\phi + sin\,\phi) - \omega t - \theta\} \qquad (29)$$

Finally, the general solution$y$ of the second order inhomogeneous DE given by (18) will now be the sum of theCF,$y_c$and thePI,y_P, that is, $y = y_c + y_p$, hence:

$$y = \sqrt{(a^2 - b^2\lambda^2) - 2(a - b\lambda)^2\, cos((n - n'\lambda)t - (\varepsilon - \varepsilon'\lambda))} * exp(-\phi) *$$

$$\{-((n - n'\lambda)t)\} * cosh\left(\sqrt{(k - k'\lambda)r(cos\,\phi + sin\,\phi)r}\right) *$$

$$\left\{cos\left(\frac{1}{2}\sqrt{(1-4(k-k'\lambda)r)}\phi\right)+sin\left(\frac{1}{2}\sqrt{(1-4(k-k'\lambda)r)}\phi\right)\right\}+$$

$$\frac{\eta k^2 E_0\, sin(kr(cos\,\phi+sin\,\phi)-\omega t-\theta)}{2(\rho^2\omega^3-\rho\eta\omega^2k^2)}-$$

$$\frac{(\eta k^2-2\rho\omega)E_0\, cos(kr(cos\,\phi+sin\,\phi)-\omega t-\theta)}{2(\rho^2\omega^3-\rho\eta\omega^2k^2)} \qquad (30)$$

However, (30) still contains the parameters of the Human vibration.Thus, we have to neglect the characteristics of the Human vibration by setting them to zero; $a = n = \varepsilon = k = 0$and work with only the absolute values of the HIV vibration which we are only exposing to the danger of the EM radiation. Thus, (30) becomes:

$$y = \sqrt{(-b^2\lambda^2)-2(b\lambda)^2\, cos(\varepsilon'\lambda-n'\lambda t)} * exp(-\phi)_*\left(n'\lambda t\right) *$$

$$cosh\left(\sqrt{(-k'\lambda)r(cos\,\phi + sin\,\phi)r}\right) * \left\{cos\left(\frac{1}{2}\sqrt{(1 + 4(k'\lambda)r)}\phi\right) + sin\left(\frac{1}{2}\sqrt{(1 + 4(k'\lambda)r)}\phi\right)\right\} * \left(\frac{\eta k^2 E_0\, sin(kr(cos\,\phi + sin\,\phi) - \omega t - \theta)}{2(\rho^2\omega^3 - \rho\eta\omega^2 k^2)}\right) - \frac{(\eta k^2 - 2\rho\omega)E_0\, cos(kr(cos\,\phi + sin\,\phi) - \omega t - \theta)}{2(\rho^2\omega^3 - \rho\eta\omega^2 k^2)} \quad (31)$$

At a steady-state $dy/dt = 0$, hence the general solution (31) then become:

$$E_0 = \left(\frac{2(\rho^2\omega^3 - \rho\eta\omega^2 k^2)\sqrt{(b^2\lambda^2) - 2(b\lambda)^2\, cos(n'\lambda t - \varepsilon'\lambda)}}{\sqrt{(\eta\omega k^2)^2 + ((\eta k^2 - 2\rho\omega)\omega)^2}\, cos(kr(cos\,\phi + sin\,\phi) - \omega t - \theta - \xi)}\right) * \left\{\frac{(b\lambda)^2(n'\lambda)\, sin(n'\lambda t - \varepsilon'\lambda)}{((b^2\lambda^2) - 2(b\lambda)^2\, cos(n'\lambda t - \varepsilon'\lambda))}(n'\lambda t) + (n'\lambda)\right\} * cosh\left(\sqrt{(k'\lambda)r(cos\,\phi + sin\,\phi)r}\right) *$$

$$exp(-\phi) * \left(cos\left(\frac{1}{2}\sqrt{(1 + 4(k'\lambda)r)}\phi\right) + sin\left(\frac{1}{2}\sqrt{(1 + 4(k'\lambda)r)}\phi\right)\right) (32)$$

Equation (32) gives theamplitude of the applied EM radiationin combination with the vibration of HIV and it has the dimension of length is$metres\ m$.

$$\vec{E} = \left(\frac{4(\rho^2\omega^3 - \rho\eta\omega^2k^2)\sqrt{(b^2\lambda^2) - 2(b\lambda)^2\, cos(n'\lambda t - \varepsilon'\lambda)}}{\sqrt{(\eta\omega k^2)^2 + ((\eta k^2 - 2\rho\omega)\omega)^2}\, cos(kr(cos\,\phi + sin\,\phi) - \omega t - \theta - \xi)} \right) *$$

$$\left\{ \frac{(b\lambda)^2(n'\lambda)\, sin(n'\lambda t - \varepsilon'\lambda)}{((b^2\lambda^2) - 2(b\lambda)^2\, cos(n'\lambda t - \varepsilon'\lambda))} (n'\lambda t) + (n'\lambda) \right\} *$$

$$cosh\left(\sqrt{(k'\lambda)r(cos\,\phi + sin\,\phi)r} \right) *$$

$$exp(-\phi) * \left(cos\left(\frac{1}{2}\sqrt{(1 + 4(k'\lambda)r)}\phi\right) + sin\left(\frac{1}{2}\sqrt{(1 + 4(k'\lambda)r)}\phi\right)\right) *$$

$$sin\{kr(cos\,\phi + sin\,\phi) - \omega t - \theta\} \qquad (33)$$

Thus, (33) is the equation of the electromagnetic EM radiationthat will selectively eradicate the HIV vibration from the human biomechanical system. The EM radiation has the dimension of length which is$metres\ m$.

3.10 Evaluation of the energy attenuation of the CCW

The equation of the radial pressure P_r and the angular pressure $P_\phi$can be conveniently convertedto force equation by multiplying (11) by $y^4$and (12) byy^3respectively. Then the resulting force equation for both the radial pressure P_r and the angular pressure $P_\phi$will now have the same unit of $kgms^{-2}$. That is:

$$\frac{\partial P}{\partial r} \times y^4 = \left\{\eta\left(\frac{\partial^2 U_r}{\partial r^2} + \frac{1}{r}\frac{\partial U_r}{\partial r} + \frac{1}{r^2}\frac{\partial^2 U_r}{\partial \phi^2} - \frac{U_r}{r^2} - \frac{2}{r^2}\frac{\partial U_\phi}{\partial \phi}\right) - \rho\left(\frac{\partial U_r}{\partial t}\right)\right\} \times y^4 \quad (34)$$

$$\frac{\partial P}{\partial \phi} \times y^3 = \left\{\eta\left(r\frac{\partial^2 U_\phi}{\partial r^2} + \frac{\partial U_\phi}{\partial r} - \frac{U_\phi}{r} + \frac{1}{r}\frac{\partial^2 U_\phi}{\partial \phi^2} + \frac{2}{r}\frac{\partial U_r}{\partial \phi}\right) - \rho\left(r\frac{\partial U_\phi}{\partial t}\right)\right\} \times y^3 \quad (35)$$

Accordingly,we can add (34) and (35) together to give the force equation below:

$$Force(F) = \left\{\eta\left(\frac{\partial^2 U_r}{\partial r^2} + \frac{1}{r}\frac{\partial U_r}{\partial r} + \frac{1}{r^2}\frac{\partial^2 U_r}{\partial \phi^2} - \frac{U_r}{r^2} - \frac{2}{r^2}\frac{\partial U_\phi}{\partial \phi}\right) - \rho\left(\frac{\partial U_r}{\partial t}\right)\right\} \times y^4 +$$

$$\left\{\eta\left(r\frac{\partial^2 U_\phi}{\partial r^2} + \frac{\partial U_\phi}{\partial r} - \frac{U_\phi}{r} + \frac{1}{r}\frac{\partial^2 U_\phi}{\partial \phi^2} + \frac{2}{r}\frac{\partial U_r}{\partial \phi}\right) - \rho\left(r\frac{\partial U_\phi}{\partial t}\right)\right\} \times y^3 \qquad (36)$$

Equation (36) can be converted to impulseby multiplying through it by time *t*.

$$I = \left\{\eta\left(\frac{\partial^2 U_r}{\partial r^2} + \frac{1}{r}\frac{\partial U_r}{\partial r} + \frac{1}{r^2}\frac{\partial^2 U_r}{\partial \phi^2} - \frac{U_r}{r^2} - \frac{2}{r^2}\frac{\partial U_\phi}{\partial \phi}\right) - \rho\left(\frac{\partial U_r}{\partial t}\right)\right\} \times y^4 \times t +$$

$$\left\{\eta\left(r\frac{\partial^2 U_\phi}{\partial r^2} + \frac{\partial U_\phi}{\partial r} - \frac{U_\phi}{r} + \frac{1}{r}\frac{\partial^2 U_\phi}{\partial \phi^2} + \frac{2}{r}\frac{\partial U_r}{\partial \phi}\right) - \rho\left(r\frac{\partial U_\phi}{\partial t}\right)\right\} \times y^3 \times t \quad (37)$$

Finally, the maximum energy equation is found from the impulse$I$ equation by multiplying through it by the maximum velocityv_m and the maximum displacement$y_m$of the CCW whose unit is m/s:$Energy(J) = I \times v_m$.

$$Energy = \left\{\eta\left(\frac{\partial^2 U_r}{\partial r^2} + \frac{1}{r}\frac{\partial U_r}{\partial r} + \frac{1}{r^2}\frac{\partial^2 U_r}{\partial \phi^2} - \frac{U_r}{r^2} - \frac{2}{r^2}\frac{\partial U_\phi}{\partial \phi}\right) - \rho\left(\frac{\partial U_r}{\partial t}\right)\right\} \times y_m^4 v_m t +$$

$$\left\{\eta\left(r\frac{\partial^2 U_\phi}{\partial r^2} + \frac{\partial U_\phi}{\partial r} - \frac{U_\phi}{r} + \frac{1}{r}\frac{\partial^2 U_\phi}{\partial \phi^2} + \frac{2}{r}\frac{\partial U_r}{\partial \phi}\right) - \rho\left(r\frac{\partial U_\phi}{\partial t}\right)\right\} \times y_m^3 v_m t \quad (38)$$

The unit of energy is $Joules(J)$ or kgm^2s^{-2} orNm. Hence, Equation (38) represents the maximum energy attenuation equation obeyed by the propagating CCW and the unit is Joules (J) or kgm^2/s^2.

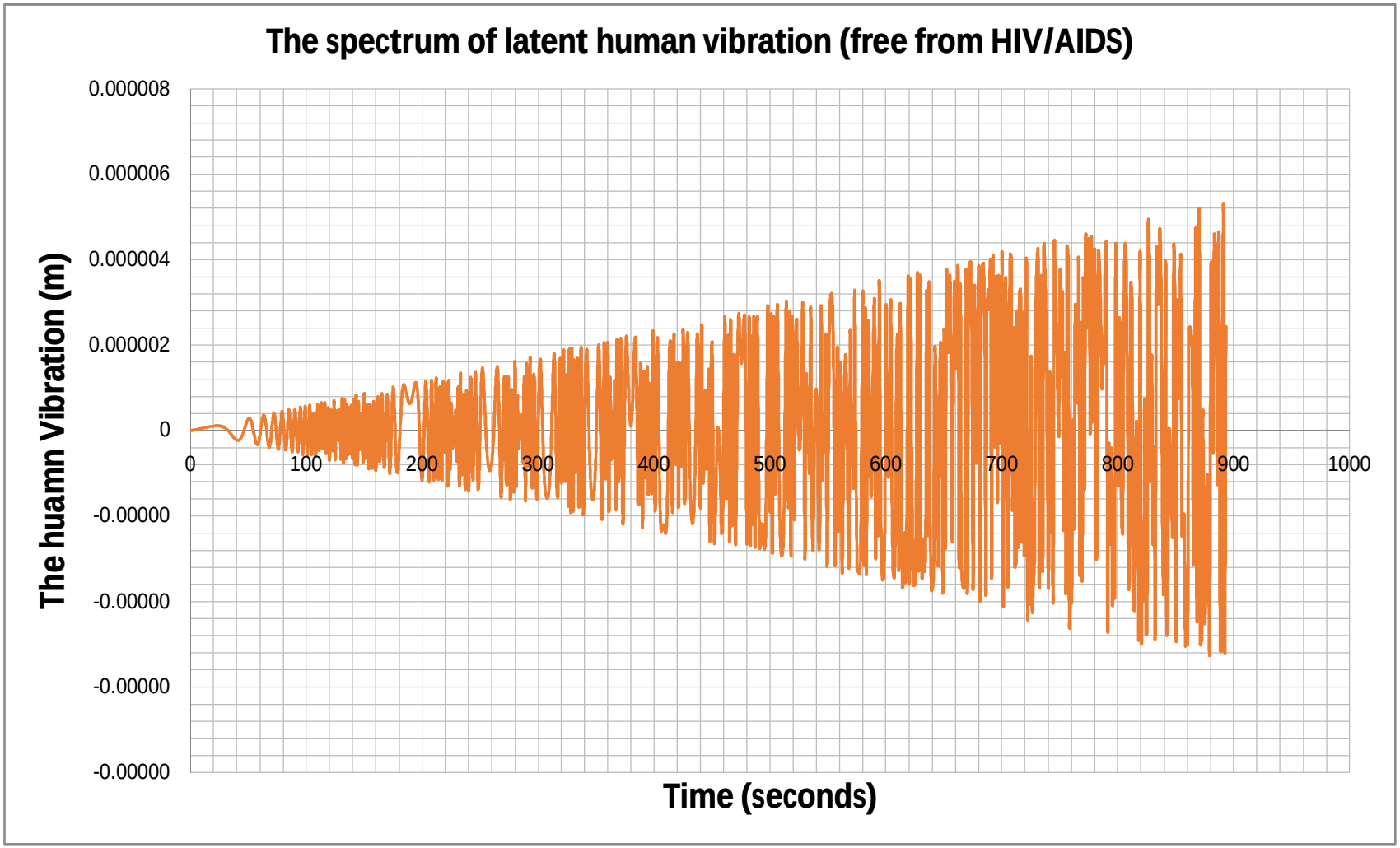

Fig. 1:Spectrum of the human vibration(host wave)

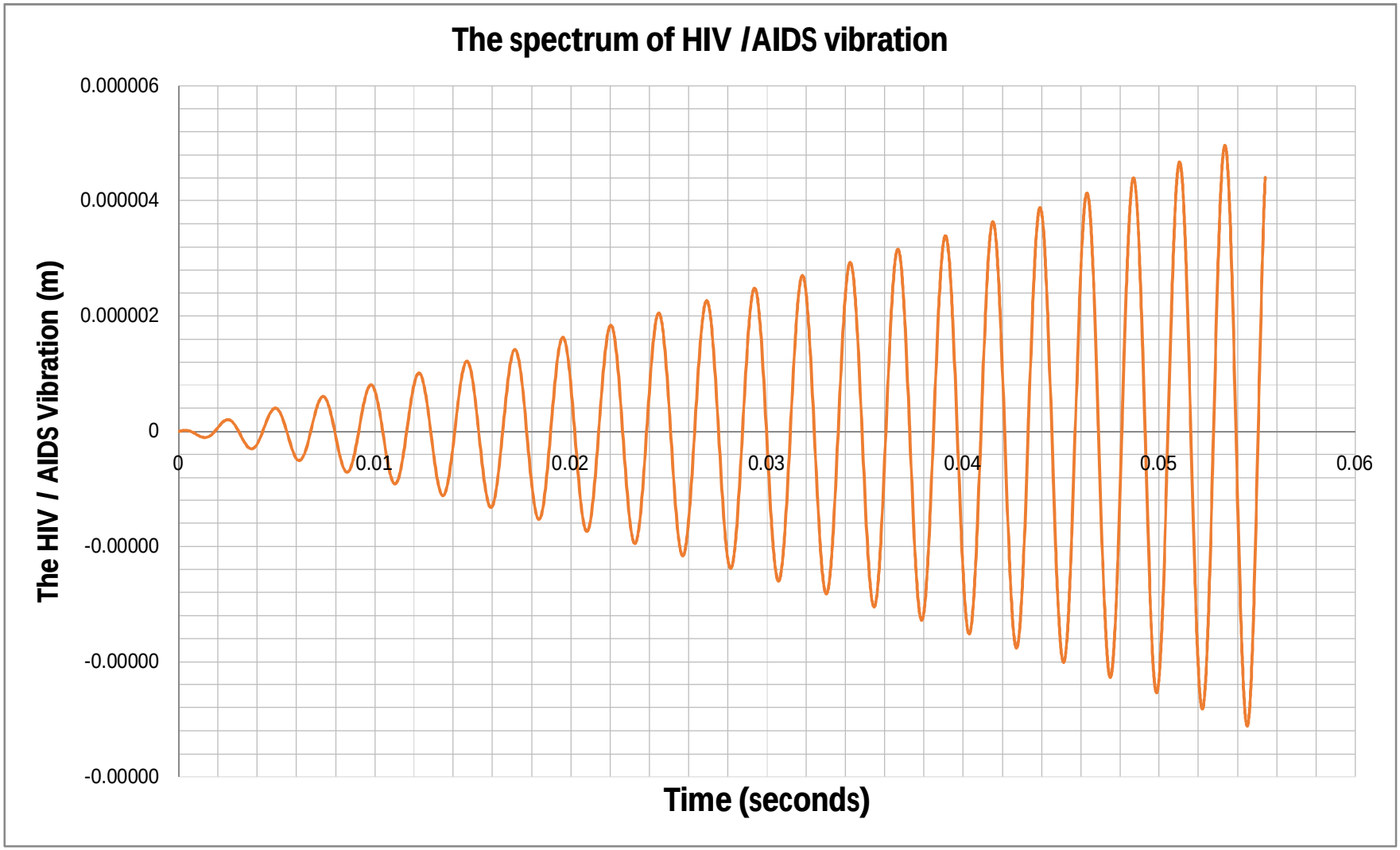

Fig. 2: Spectrum of the HIV/AIDS vibration(parasitic wave)

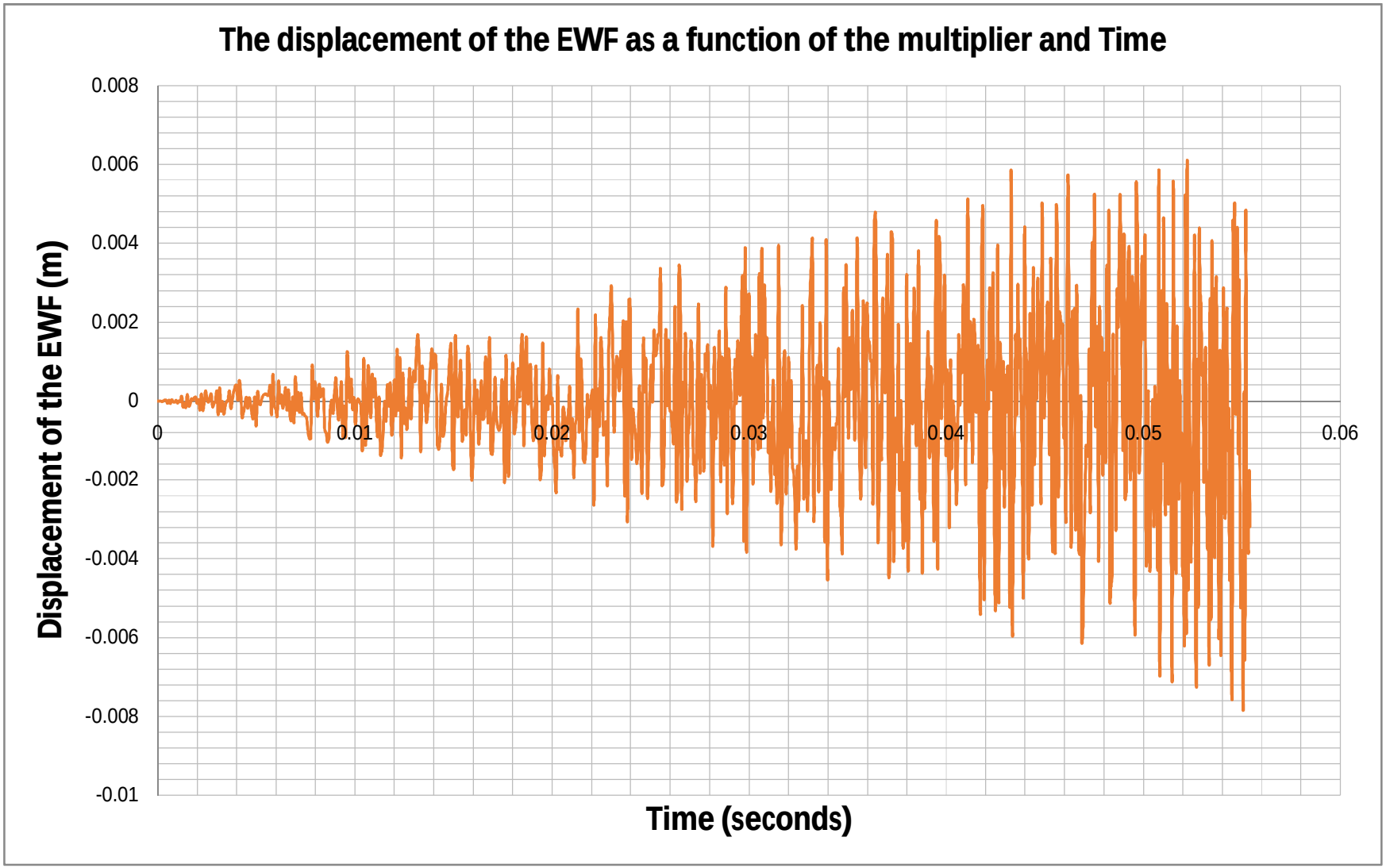

Fig. 3:Spectrum of the Constitutive Carrier Wave (CCW)

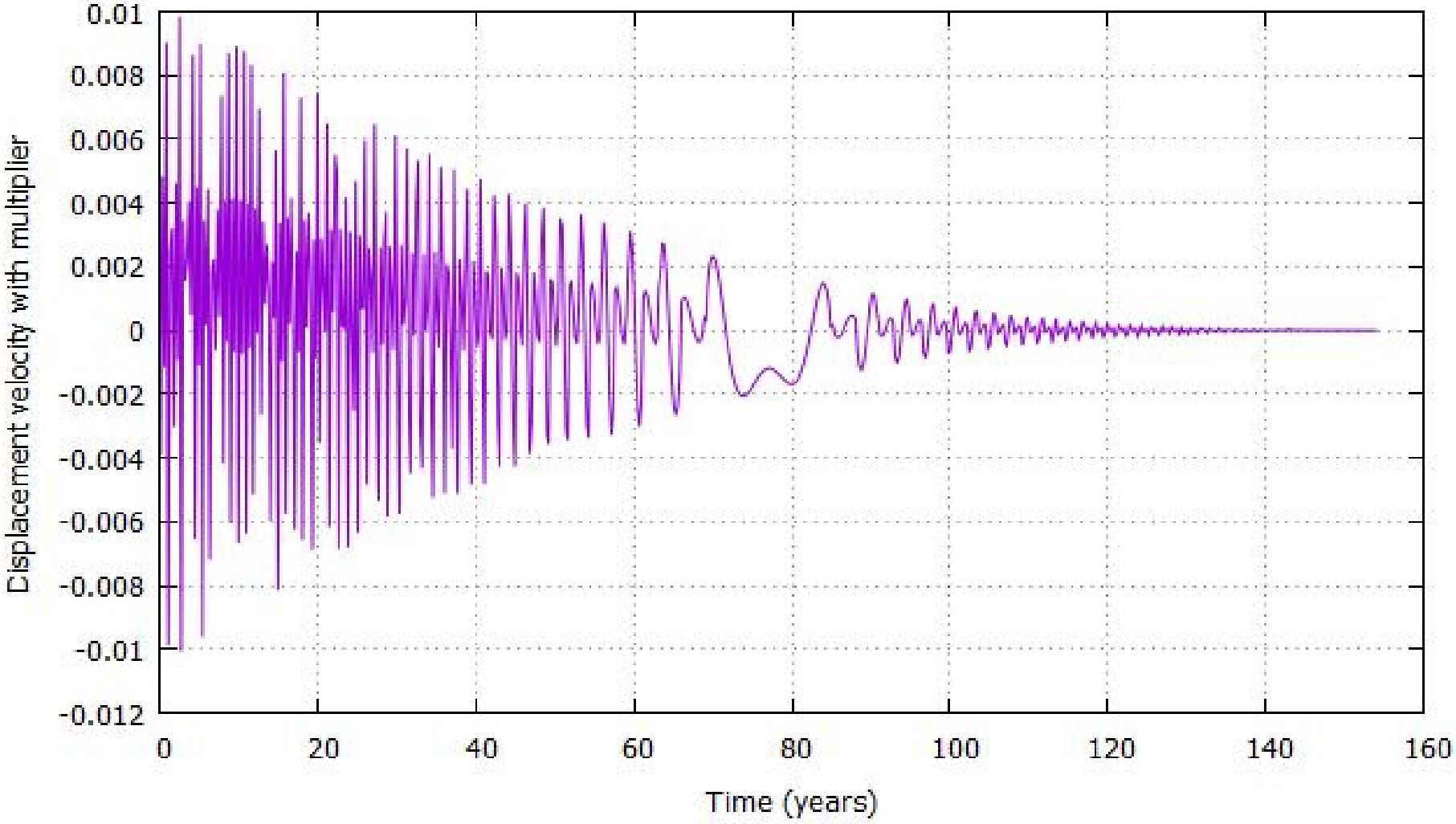

Fig. 4. Shows the spectrum of displacement velocity v of the CCW with λ.

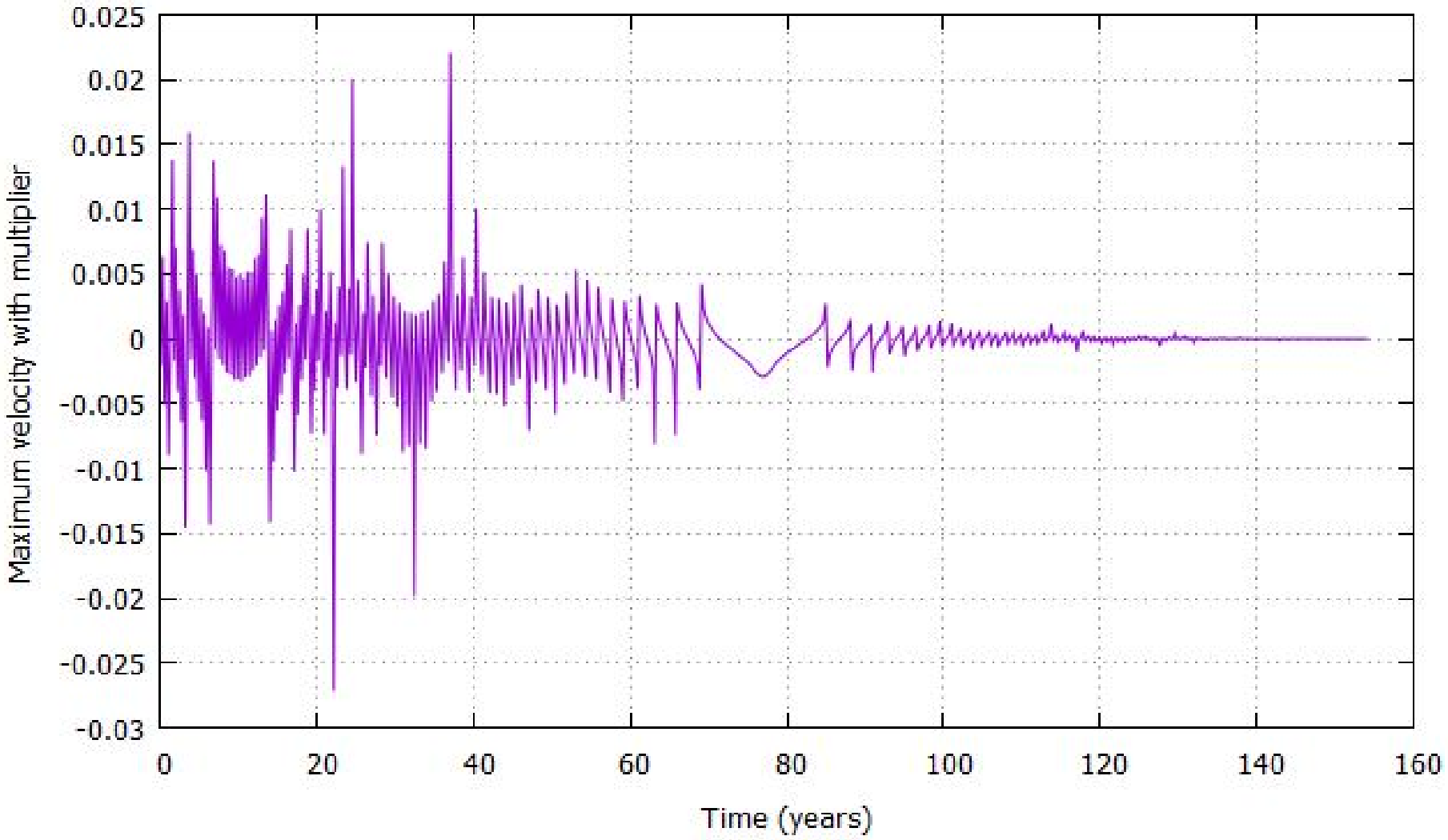

Fig. 5. Shows the spectrum of maximum velocity v_m of the CCW with λ

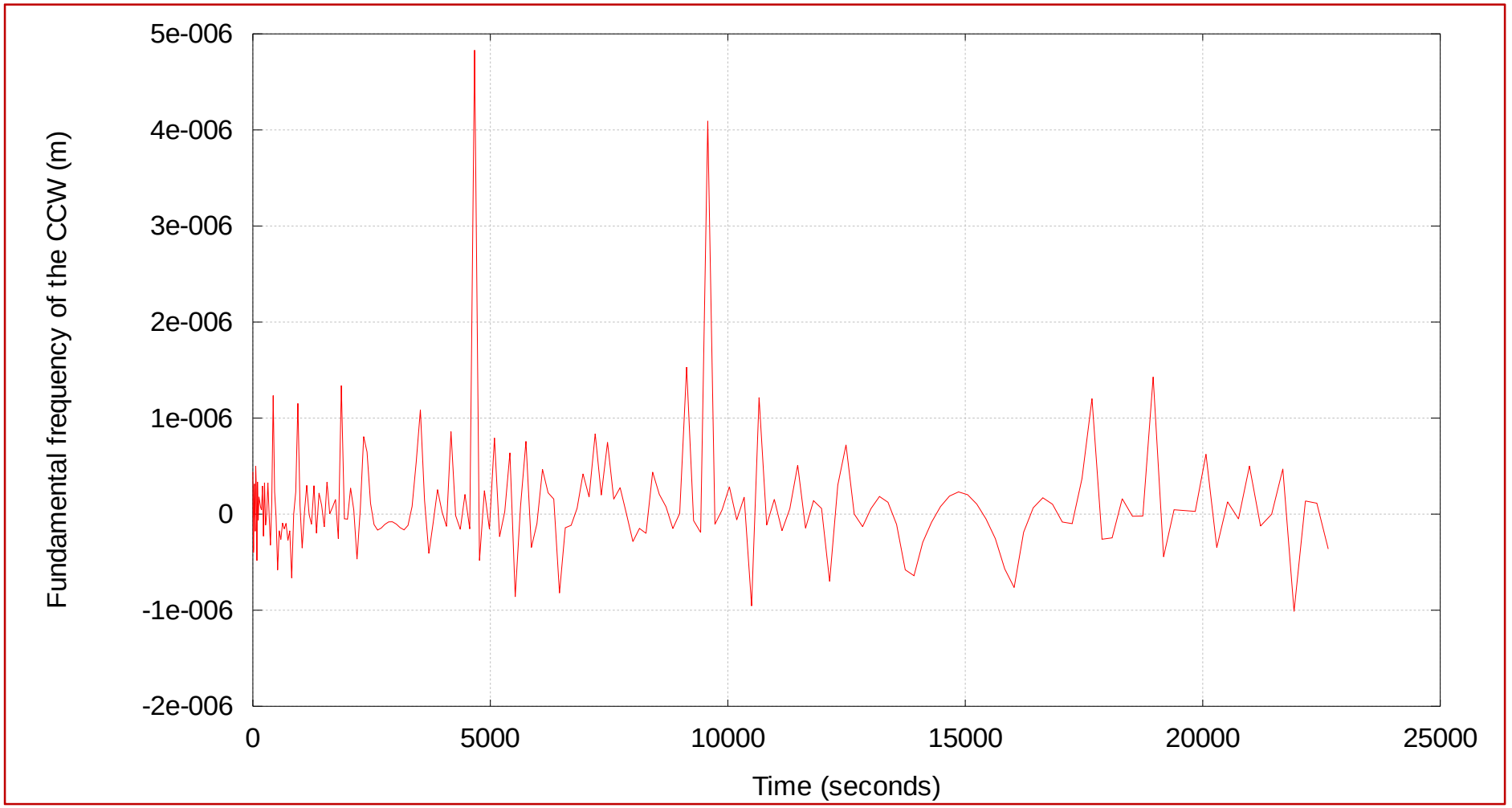

Fig. 6: Spectrum of the Energy of CCW as a function of $\lambda[0, 127]$.

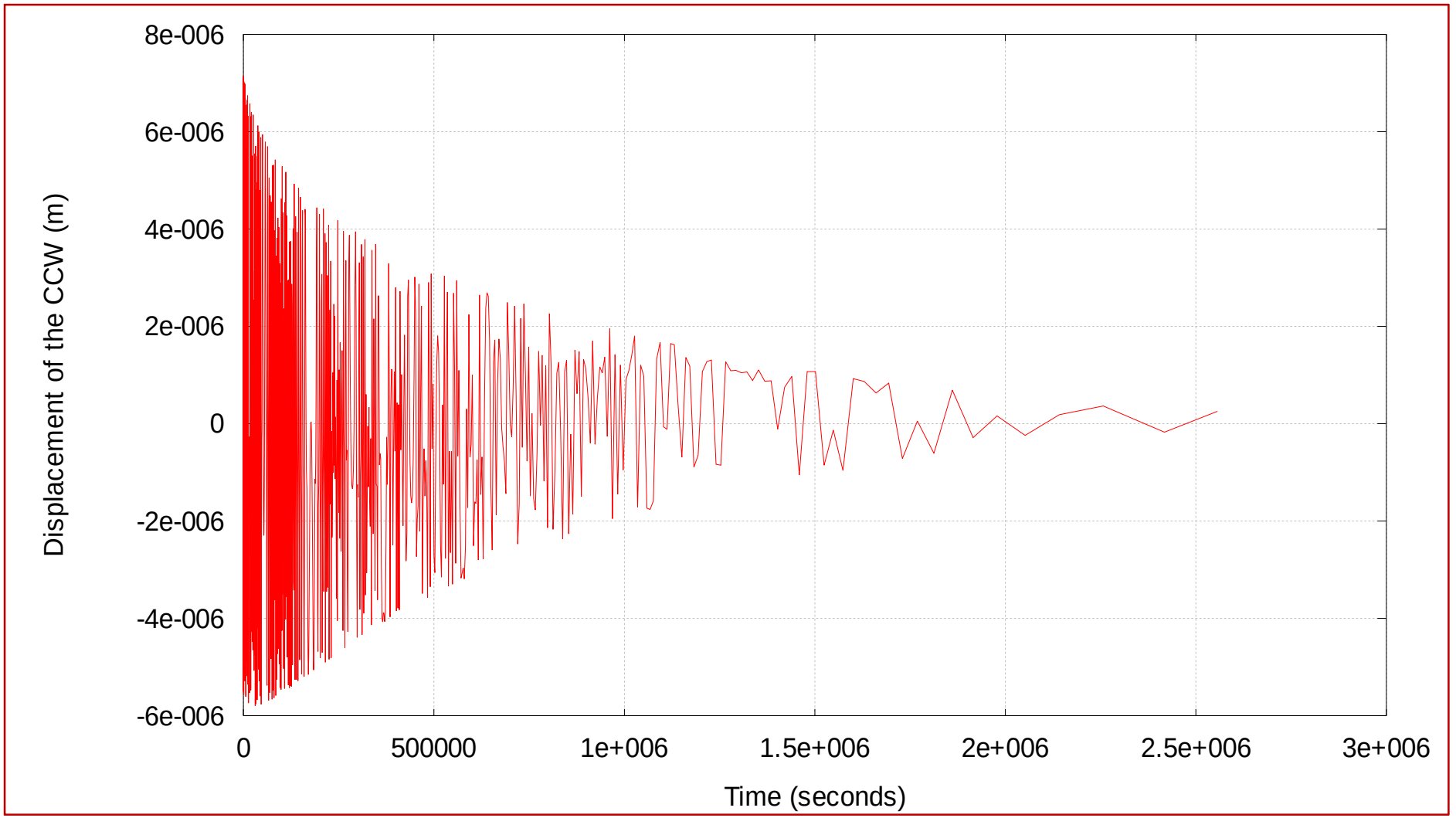

Fig. 7: Spectrum of the Energy of CCW as a function of $\lambda[0, 127]$

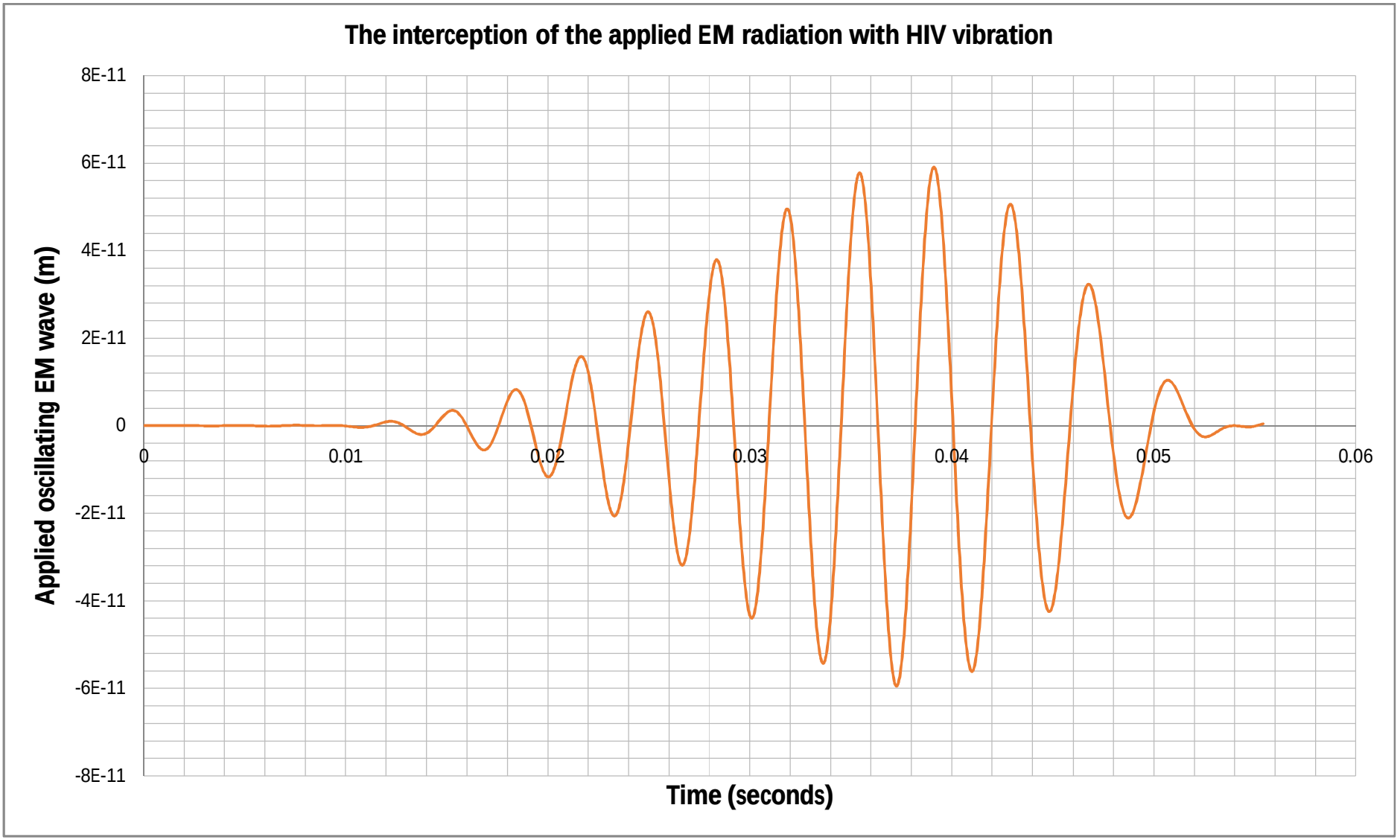

Fig. 8:Spectrum of the interception of EM radiation with HIV vibration

3.11 Results of the interception of EM wave with HIV vibration

From the spectra of Fig.1 and 2,the human and the HIV vibrationhave a common origin and are oppositely related, that is, at the source they are out of phase.While the human vibration has a crest at the origin, the HIV vibration has a trough which means both vibrations areinitially incoherent.The human vibration is characterized by increasing amplitude, high frequency and short wavelength, while the HIV vibration is characterized by increasing amplitude, but low frequency and long wavelength.

From the spectrum of the CCW shown in Fig. 3 the amplitude and the frequency show irregular wave pattern as the CCW progresses away from the source or origin. Theabnormalcharacteristics in the waveform is due to the destructive interference of the HIV vibration on the human vibration.

In Figure 4 and 5the CCW show anomalous behaviour between the ages of 65 and 84 $years$, and the CCW becomes significantly ineffective beyond 140$years$. The anomalous behaviour indicates that greater number of persons begin to

experience weakness and malfunction in energy, pressure-gradient,and other biomechanical parameters. A high number of human populations have intense ailment and common death rate within this interval.

Fig. 6 shows thespectrum of the Energy of CCW as a function of $\lambda[0,127]$.The Spectrum show high peak values at 5000 seconds (1.38 hrs) and 10000 seconds (2.7 hrs) respectively. The human energy vibration first notices the presence of the interfering HIV vibration within $3\,hrs$ when the HIV enters the human system, and the vibratory energy is now responding to the presence of the invasive HIV.

Fig. 7: shows the spectrum of the Energy of the CCW as a function of the multiplier λ. It is obvious from the spectrum that beyond 1250000 seconds (14 yrs) the amplitude of the CCW attenuates with irregularfrequency and the displacement goes to zero.

Fig.8shows that the amplitude and frequency of the applied EM radiation are both zero between 0 – 0.012 seconds.This is the region of destructive interference between the applied EM radiationand the HIV vibration. Thus, the HIV/AIDS vibratory characteristics would have beenselectively destroyedfrom the human system by radiation therapy within0.012 seconds.After this time, the monochromatic frequency which only depend on the EM radiation finally attenuates to zero after a period of 0.05612 seconds.

4.0 CONCLUDING REMARKS

Mr. Vice Chancellor Sir, in this lecture, I have presented some length and not the depth of my research work.

It is shown that if the Physics of Vibrations are properly harnessed and applied, they will be very useful in solving variousproblems in energy and pressure force law, and most importantly to proffer solutions toall forms of vector-borne human infectious diseases.

Thus, generally, the physics of vibration is a very sensitive field for the study of different areas of Mechanics and properties of matter, Biophysics, Medical Physics and Engineering Physics.

5.0 RECOMMENDATIONS

Mr. Vice Chancellor Sir, now that I have talked about "Physics and the Theory of Vibration – the Cause of Creation and Existence" I wish to make the following recommendations:

- It should be the sole responsibility of the university management to fund inaugural lectures and not the responsibility of individual lecturer.
- Centres for Energy and Radiation research should be established in our Nigerian universities, since vibration plays a key role in creation and existence of mankind.
- Facilities for computational simulation and analysis should be provided in our universities and research centres. This would enable the study of various

vector-borne human infectious diseases, vibratory related ailments easily characterized and known.

- Facilities for the characterization and study of the properties of vibration and waves should be made available in our universities and research centres. So that researchers in the area of, Radiology, Biophysics and Medical physics can effectively carryout research work.

- Our local industries should collaborate with universities through funding of research works to find solutions to any associated problems in the industries.

- There should be synergy between our Nigerian universities, research institutions, and industries for the commercialization of research outputs especially in the areas of new materials and devices.

- Compulsory seminars and conferences should be conductedand funded on regular basis in our universities to enable active lecturers to showcase any recent academic research findings.

- Our Nigerian universities should endeavour to take responsibility of attaching to the office of every Professor a minimum of 5 (five) research fellows, as this would enhance serious academic work and research continuity.

6.0 CONTRIBUTION TO KNOWLEDGE / NATIONAL DEVELOPMENT

Mr. Vice Chancellor, Sir, I will be very proud to mention in this inaugural lecture some of the contributions which I have made to knowledge and National development. They are:

- I have supervised several MSc and PhD students in this university, FUPRE and UNIJOS.
- I have been a visiting lecturer to several universities in this country both federal, state andprivate university.
- I have served in different universities in various capacity in this country.
- I have served as External Examiner for PhD degree students in Theoretical Physicsof the University of Benin, Benin City.

- I have served as External Examiner for MSc degree students in MathematicalPhysics of the Delta State University, Abraka, Delta State.
- I have served as External Assessor for the promotion of lecturer to the rank of Professor of Theoretical Physics, in University of Benin, Benin City.
- I have served as reviewer for many national and international journals.
- Several mathematical simulations which I have developed in the course of my studyis helping to promote special areas in physics such as the theory of waves and vibrations, acoustics science and telecommunication engineering.
- The positive outcome of my studies hasmotivated academic researchersto contribute more to academic excellence of our country by extending the theories and concepts of my scientific work and discoveries.
- **I** have also identified the matrix of scientific priorities that should bring us measurably closer to our vision of developing a permanent cure to HIV/AIDS infection which has been the global problem for about 42 years now.

7.0 ACKNOWLEDGEMENT

I am highly indebted to my colleagues in the department of physics, which I take as my second family. Prof. John B. Arubayi, Prof. Ezekial O. Agbalagba, Prof. EnohOgherohwo, Prof. (Mrs) OmosedeE. Osafile, Dr Bliss Osakwe, Dr. Nelson Nenuwe, Dr. YemiOnifade, Dr Judith Umukoro, Dr. OlaseniVictor, MrsOmagbemiOghogho and Mr. Destiny Erute, our collective interest and oneness has been very good and productive in the Department, I thank you all. Also, special thanks to all other members of staff of Physics Department.

I wish to appreciate my children: Mr. EnaibeKesiena Perfect, Miss EnaibeOkiemute Catherine, Miss EnaibeEmuobonuviePriscilla, Mr. EnaibeOgheneyareKingsley, Mr. EnaibeOvie Maxwell and Mr. EnaibeUrhievwe Lewis. Thank you for your love, prayers and supportive understanding.

Special thanks to my wives, Mrs. Felicia Ejiro Enaibe and Mrs. Faith Omojevwe Enaibe. I happily thank both of you for being a good companion, good home makers, good wives indeed. Thank you for your love, care, understanding and

relentless maintenance of the home, it was the collective support from both of you that made me socially and academically successful in life today.

I also thank the following persons for their academic contribution and technical support in the course of preparing for the inaugural lectures, Dr. AkpataErhieyovwe of the Department of Physics, DELSU, Dr. TesiGodswill, Mr. Ohwimu Joseph Godday, Mr. Anwani Egwu Samuel, Mr. Dolor Oghenevwegba Austin, Mr. OhwoEfe, all of Chemistry Department, FUPRE.

I warmly appreciate and recognize Dr Duke Okoro (A.K.A. Orieda'ebe), the Rector of Federal Polytechnic, Orogun, Delta State, Olorogun WilsonEjeben (the Usio of Udu Kingdom),MrOyovwariorotu Eghwubare Robert and Mr Obiebi Uyoyou Johnson, for their logistic support.

I THANK YOU ALL FOR LISTENING