Quantum Based Physical Biosensor For Detection Of Human Health With Infrared And Weighing Mode

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ABSTRACT - **In present scenario there is no such devices that find out your overall body physical health status. In this research work quantum has been used as physical biosensor for the detection of human health through electromagnetic waves emitted by cells of human body in which about 25 million cells are splitting up every second and blood cells are constantly renewing at a rate of about 100 million per minute. In this device there are mainly three modes of biosensor, quantum mode, infrared mode and weighing mode. In quantum mode, the process of cellular split-up and renewal, the charge bodies of nucleus and extra nuclear electrons as the basic unit of a cell are moving and changing ceaselessly at a high speed as well, emitting electromagnetic wave without interruption. In infrared mode, biosensor measures the temperature of human body. Simply measure the weight of human body by using weighing mode sensor which is included in device after that fill the accurate weight in systematic manner in system and holding biosensor device in palm, it detects the 37 parameter from the various part of human body within 59 seconds, the health data will be recorded in tabular form in the system.**

KEY WORDS: **QUANTUM, INFRARED, WEIGHING, PHYSICAL, BIOSENSOR, HEALTH DETECTION DEVICE.**

I. INTRODUCTION

Quantum word come from "quanta" is the minimum amount of any physical entity that rapidly reads your energy field. The concept of quantization of radiation was discovered in 1900 by Max Planck, who had been trying to understand the emission of radiation from heated objects, by assuming that energy can be absorbed or released only in tiny, differential, discrete packets (which he called "bundles", or "energy elements"),[1] The fundamental notion that a physical property may be "quantized" is referred to as "the hypothesis of quantization".[2] This means that the magnitude of the physical property can take on only discrete values consisting of integer multiples of one quantum. Gernally biosensor is an analytical device that capture the biological signal and convert it into a detectable electrical signal here, the quantum has been used for physical biosensor device which analysis the electromagnetic waves emitted by human body. As per scientific basis of the analysis, the human body is aggregated of numerous cells, which continuously grow, develop, split, regenerate and die. Quantum well confines electrons or holes in one dimension and allow free propagation in two dimensions. Quantum wire confine electrons or holes in two spatial dimensions and allow free propagation in the third. Those confined in a quantum dot are not free in any dimension. This confinement is shown in Fig.1 (where, DOS stands for Density of States i.e.., energy-gapped electron density of states) For common semiconductors, the length scale for a free conduction electron is about 100 angstroms. (One angstrom is meter, approximately the radius of a hydrogen atom.) An electron inside a cube of semiconducting material 100 angstroms on a side is essentially confined to a point. Quantum dots are man- made "droplets" of charge that can contain anything from a single electron to a collection of several thousand.[3] Their typical dimensions range from nanometers to a few microns, and their size, shape and interactions can be precisely controlled through the use of advanced nanofabrication technology. So, in this we create one type quantum physical biosensor in which detect and analysis of body health details.

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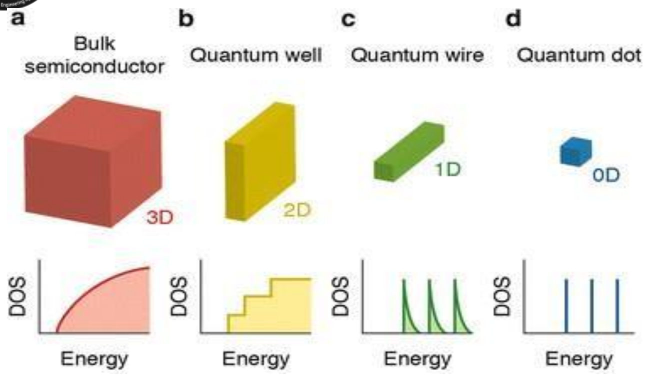

Fig.1: Confinement of different structures.

Infrared radiation (IR), sometimes called infrared light, is electromagnetic radiation (EMR) with longer wavelengths than those of visible light, and is therefore generally invisible to the human eye, although IR at wavelengths up to 1050 nanometres (nm)s from specially pulsed lasers can be seen by humans under certain conditions.**[09][10][11][12]** IR wavelengths extend from the nominal red edge of the visible spectrum at 700 nanometres (frequency 430 THz), to 1 millimetre (300 GHz).**[13]** Most of the thermal radiation emitted by objects near room temperature is infrared. As with all EMR, IR carries radiant energy and behaves both like a wave and like its quantum particle, the photon.

Fig.2: A pseudocolor image of two people taken in long-wavelength infrared (body- temperature thermal) light.

Infrared radiation was discovered in 1800 by astronomer Sir William Herschel, who discovered a type of invisible radiation in the spectrum lower in energy than red light, by means of its effect on a thermometer.**[14]** Slightly more than half of the total energy from the Sun was eventually found to arrive on Earth in the form of infrared. The balance between absorbed and emitted infrared radiation has a critical effect on Earth's climate. Infrared radiation is emitted or absorbed by molecules when they change their rotational- vibrational movements. It excites vibrational modes in a molecule through a change in the dipole moment, making it a useful frequency range for study of these energy states for molecules of the proper symmetry.

An infrared biosensor which infers temperature from a portion of the thermal radiation sometimes called black-body radiation emitted by the object being measured. They are sometimes called laser thermometers as a laser is used to help aim the thermometer, or non-contact thermometers or temperature guns, to describe the device's ability to measure temperature from a distance. By knowing the amount of infrared energy emitted by the object and its emissivity, the object's temperature can often be determined within a certain range of its actual temperature. Infrared biosensor are a subset of devices known as "thermal radiation thermometers". The design essentially consists of a lens to focus the infrared thermal radiation on to a detector, which converts the radiant power to an electrical signal that can be displayed in units of temperature after being compensated for ambient temperature. This permits temperature measurement from a distance without contact with the object to be measured. A non-contact infrared thermometer is useful for measuring temperature under circumstances where thermocouples or other probe-type sensors cannot be used or do not produce accurate data for a variety of reasons. Infrared biosensor are characterised by specifications including accuracy and angular coverage. Simpler instruments may have a measurement error of about ±2 °C or ±4 °F. The distance-to-spot ratio (D:S) is the ratio of the distance to the measurement surface and the diameter of the temperature measurement area. For instance, if the D:S ratio is 12:1, the diameter of the measurement area is one-twelfth of the distance to the object. A sensor with a higher ratio of D to S is able to sense a more-specific, narrower surface at a greater distance than one with a lower ratio. A 12:1 rated device can sense a 1-inch circle at a distance of one foot, whereas a 10:1 ratio device achieves the same 1 inch circle at 10 inches, and a wider, less-specific circle of 1.2 inches at a distance of 12 inches. The ideal target area should be at least twice the size of the spot at that distance,**[15]** with smaller areas relative to distance resulting in less accurate measurement. An infrared biosensor cannot be placed too close to its target, or this proximity causes heat to build up in the thermometer's housing and damages the sensor. Measurement error generally only decreases with too much distance because of the effects of reflectivity and the inclusion of other heat sources within the sensor's field of view.**[16][17]** According to the Stefan–Boltzmann law, radiant power is proportional to the fourth power of temperature, so when the measurement surface has both hot and cold areas, the indicated temperature may be higher than the actual average temperature, and closer to fourth-power mean average.**[18]** Most surfaces have high emissivity (over 0.9 for most biological surfaces), and most IR thermometers rely on this simplifying assumption; however, reflective surfaces have lower emissivity than non-reflective surfaces. Some sensors have an adjustable emissivity setting, which can be set to measure the

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temperature of reflective and non-reflective surfaces. A non- adjustable sensor may be used to measure the temperature of a reflective surface by applying a non-reflective paint or tape, with some loss of accuracy. A sensor with an adjustable emissivity setting can also be used to calibrate the sensor for a given surface, or to measure the emissivity of a surface. When the temperature of a surface is accurately known (e.g. by measuring with a contact thermometer), then the sensor's emissivity setting can be adjusted until the temperature measurement by the IR method matches the measured temperature by the contact method; the emissivity setting will indicate the emissivity of the surface, which can be taken into account for later measurements of similar surfaces only. On its most basic design an infrared biosensor consists of a lens to focus the infrared (IR) energy on to a detector, which converts the energy to an electrical signal that can be displayed in units of temperature after being compensated for ambient temperature variation. This configuration facilitates temperature measurement from a distance without contact with the object to be measured. As such, the infrared thermometer is useful for measuring temperature under circumstances where thermocouples or other probe type sensors cannot be used or do not produce accurate data for a variety of reasons. Some typical circumstances are where the object to be measured is moving; where the object is surrounded by an EM field, as in induction heating; where the object is contained in a vacuum or other controlled atmosphere; or in applications where a fast response is required.

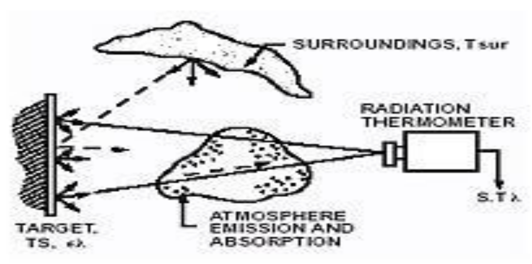

Fig.3: Noncontact Temperature Measurement

A weighing scale (or weighing balance) is a device to measure weight or mass. These are also known as mass scales, weight scales, mass balance, weight balance, or simply scale, balance, or balance scale. Electronic digital scales display weight as a number, usually on a liquid crystal display (LCD). They are versatile because they may perform calculations on the measurement and transmit it to other digital devices.[4] In a digital scale, the force of the weight causes a spring to deform, and the amount of deformation is measured by one or more transducers called strain gauges. A strain gauge is a conductor whose electrical resistance changes when its length changes. Strain gauges have limited capacity and larger digital scales may use a hydraulic transducer called a load cell instead.[5] A voltage is applied to the device, and the weight causes the current through it to change. The current is converted to a digital number by an analog-to-digital converter, translated by digital logic to the correct units, and displayed on the display. Usually the device is run by a microprocessor chip.

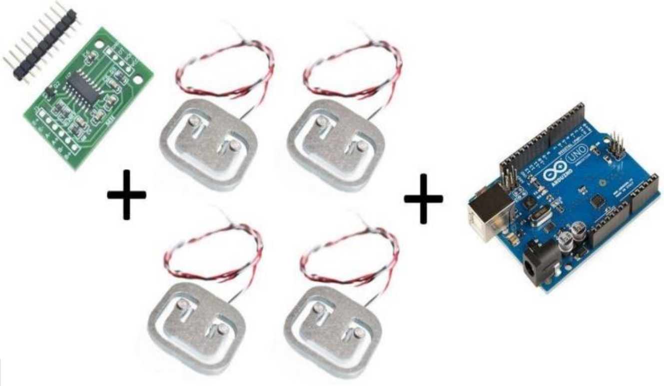

Fig.4: Actual view of integrated circuit, strain guage bridges and functioning device

II. MATERIALS AND METHODS

MATERIALS

There are different types of circuits and electronic parts are used in quantum biosensor are shown in tabular form in Table 1 & Table 2 such as copper coated circuit plate both side, digital display unit, resistance unit are in different ohms, Integrated Circuit coded, dotted LED's, quantum units, P-N Diodes, sensor unit, M-F USB, DN-USB Cable, IC database card

slot, 4pin M-F socket, electronics gates, rounded toughness glass plate, weighing balance bridges, infrared unit, rechargeable lion battery, CR2032 buttons cells, dot pin buttons.

S.L. No.	Material	Quantity
1.	Copper coated circuit plate both side	04
2.	Display Unit	04
3.	Resistance Unit are in different ohms	30
4.	Integrated Circuit coded	05
5.	Dotted LED's	15
6.	Quantum Units	04
7.	P-N Diodes	04
8.	Quantum Biosensor Unit	01
9.	M-F USB slot	02
10.	DN-USB Cable	01
11.	IC database card slot	01
12.	Soldering kit materials	01
13.	4 pin M-F socket	02

Table 1

S.L. No.	Material	Quantity
14.	Electronics Gates	06
15.	Toughness round glass plate	01
16.	Weighing balance bridges	04
17.	Infrared Unit	01
18.	Winded electronics wires	06mt.
19.	Plastic moulded frames	04
20.	Electronic screw gauge-set	01
21.	Modular covering box	01
22.	Plastic blanky	05
23.	Rechargeable lion battery	01
24.	CR2032 buttons cells	03
25.	Dot pin buttons	06

Table 2

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METHODS

We arrange all the circuit materials after that the assembling is started as per shown in **Fig.5, Fig.8** and **Fig.9** of Quantum mode and weighing mode of circuit diagram, In FIG.5 quantum mode there is transmitter, gate and power amplifier, quantum biosensor, receiver, analog to digital converter, digital to analog converter, spectrum and computer in which pulse programmer, fourier transform and accumulation unit, all these are connected as a specific manner, in which transmitter and pulse programmer connected to gate and power amplifier which is provides the signal to quantum biosensor for starting the health analysis and pulse programmer has an another wire which is connected to receiver also, after the 59 seconds the quantum biosensor provides the signal to receiver and receiver provides this signal to analog to digital converter which is connected to accumulation unit accumulate all the signals to transform the pulse programmer and digital to analog converter to spectrum in this circuit diagram the main unit is quantum biosensor in which there are different types of electronic parts are used such as integrated circuit, P-N Diodes, M-F USB slot, DN-USB cable, IC card slot, 4pinM-F socket, electronic gates these are main parts of quantum biosensor.

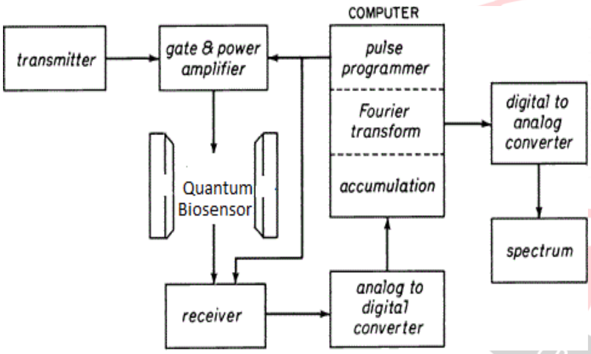

Fig.5: Circuit diagram quantum mode biosensor

All sensors convert a measurand (a variable to be measured) into a signal. sensor output may take many forms depending on the sensor and measurand types, including force, displacement, voltage, or electrical resistance. Because most controllers and displays use input types which differ from sensor outputs transmitter are used to convert the raw output to a compatible signal. This signal may be analog or digital in nature; the term "sensor transmitter" usually infers the transmission of an analog signal, while purely digital outputs are typically produced by an analog-to-digital converter (ADC), shown in **Fig.6**

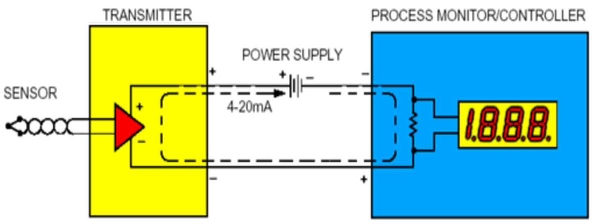

Fig.6: The role of a transmitter in a basic control circuit.

Sensor transmitters are primarily used to produce an output with a higher transmission range than the sensor itself can provide. For example, a sensor which outputs a small voltage or resistance value has a short range due to losses inherent in transmission wires.[6] A gate driver is a power amplifier that accepts a low-power input from a controller IC and produces a high-current drive input for the gate of a high-power transistor such as an IGBT or power MOSFET. Gate drivers can be provided either on-chip or as a discrete module. In essence, a gate driver consists of a level shifter in combination with an amplifier. A gate driver IC serves as the interface between control signals (digital or analog controllers) and power switches (IGBTs, MOSFETs, SiC MOSFETs, and GaN HEMTs). An integrated gate-driver solution reduces design complexity, development time, bill of materials (BOM), and board space while improving reliability over discretely-implemented gate-drive solutions.[7]

An Analog to Digital Converter (ADC) takes an analog input signal and converts the input, through a mathematical function, into a digital output signal. While there are many ways of implementing an ADC, there are three conceptual steps that occur.

1. The signal is sampled.
2. The sampled signal is quantized.
3. The quantized signal is digitally coded.

Sampling

By sampling we turn a continuous-time function which may take on infinitely many values at different times into a discretized function that may take on infinitely many values at different discrete indices.

Sampling generally is done with a Sample-And-Hold circuit (simple experiments can be done using a capacitor and switch). To be able to reconstruct the signal we must consider the Sampling Theorem which says that a sampling frequency twice the highest frequency we're expecting is needed. In a simple way sampling can be defined as the process of taking samples from the continuous time function x(t) and for the signal to reconstruct we must consider the sampling theorem which states that the sampling frequency must be always greater than or equal than the highest frequency.

Quantization

Quantization is the process of taking a continuous voltage signal and mapping it to a discrete number of voltage levels. The number of voltage levels affects the quantization noise that occurs. Since digital computers are binary in nature, the number of quantization levels is usually a power of 2, i.e.,

$$N=2^n$$

where n is the number of quantization bits.

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The signal may be amplified or attenuated before going into the ADC, so that the maximum and minimum voltage levels give the best compromise between resolution of the signal levels and minimization of clipping.

Encoding

Encoding is the process of converting the quantized signals into a digital representation. This encoding is performed by giving each quantization level a unique label. For instance, if four bits are used, the lowest level may be (in binary) 0000, and the next highest level 0001, etc.

An Digital to Analog converter (DAC) takes a digital signal and converts it, through a mathematical function, into an analog signal. Again, the DAC may be implemented in a number of ways, but conceptually it contains two steps.

1. Convert each time step of the digital signal into an "impulse" with the appropriate energy. In a real system, this could be accomplished by creating short pulses that have the same voltage, but whose total power is modified by changing the pulse length. This pulse train produces a signal whose frequency response is periodic (and theoretically extends to infinity).
2. Apply a low-pass filter to the time sequence of impulses. This removes all of the high-frequency periodicities, leaving only the original signal.

In fact along with the counters we are using digital to analog convertor while converting analog signal to digital signals also. Here we can use counter along with the shift register to store the digital data.

The infrared mode detects the body temperature, it is a device that measures the infrared radiation – a type of electromagnetic radiation below the visible spectrum of light - emitted by an object. The most basic design of infrared biosensor consists of a lens to focus the infrared thermal radiation onto a detector, which converts the radiant energy into an electric signal. Infrared biosensor based on black body radiation, according to which any material with a temperature above absolute zero has molecules moving within it. The higher the temperature, the faster the molecules move. The molecules emit infrared radiation as they

move, and emit more radiation, including visible light, as they get hotter. Infrared mode detect and measure this radiation. Infrared light can be focused, reflected or absorbed like visible light. Infrared sensors employ a lens to focus infrared light from an object onto a detector known as a thermopile. The function of the thermopile is to absorb infrared radiation and convert it to heat. The thermopile gets hotter as it absorbs more and more infrared energy. The excess heat is converted into electricity, which is transmitted to a detector which determines the temperature of the object. Infrared radiation, or IR, is just one type of radiation that exists within the electromagnetic spectrum. The illustration below shows in **Fig.7**

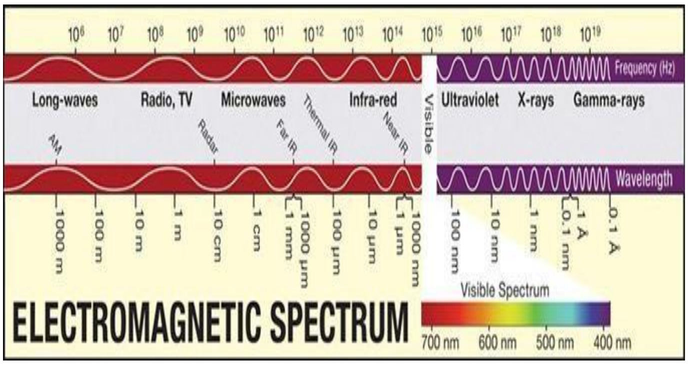

Fig.7: Wavelength and frequency of the electromagnetic spectrum.

All matter emits energy in the form of IR (heat). If there is a temperature difference between objects, including the surrounding environment, then this gradient can be measured and used. If the object in question is at the same temperature as its surroundings, the net radiation energy exchange will be zero. In either case, the characteristic spectrum of the radiation depends on the object and the surrounding absolute temperature. IR thermometers take advantage of this "radiation dependence" on temperature to produce a value for the targeted object and to display the results for the operator to read. IR light works like visible light—it can be focused, reflected or absorbed. IR thermometers typically use a lens to focus light from one object onto a detector, called a thermopile. The thermopile absorbs the IR radiation and turns it into heat. The more IR energy, the hotter the thermopile gets. This heat is turned into electricity. The electricity is sent to a detector, which uses it to determine the temperature of whatever the thermometer is pointed at shown in **Fig.8**. The more electricity, the hotter the object. The higher the temperature, the more electricity sent to the detector, the higher the reading.

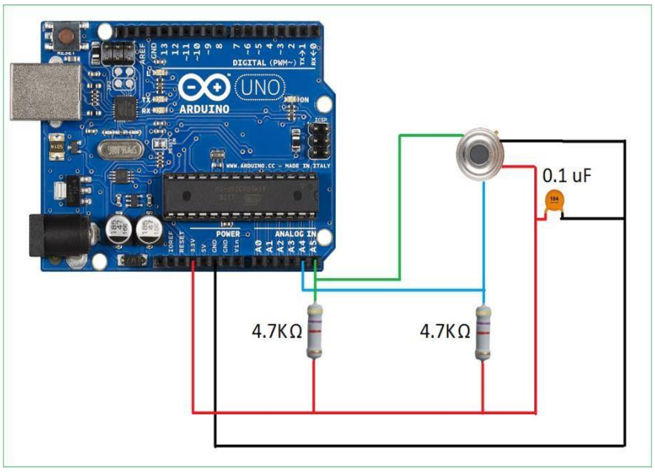

FIG.8: Circuit diagram of infrared mode biosensor

The basis of rapid and exact working of our weigh cells is the principle of Electro Magnetic Force Restoration (EMFR). The basic principle is comparable to a simple

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beam balance. The weight is laid on both side of the beam (coil arm), the results is that the coil attached to the other side of the beam tries to move out of the magnetic field of the magnet. A zero indicator (photoelectric beam) recognizes any minimal deviation, and immediately so much current is sent through the coil via an electrical regulator circuit that the balance beam hardly moves and remains in its neutral position. The deviation occurring is merely a matter of a few nanometres, quite in contrast to movement-dependent measuring processes such as with strain gauge. The force imposed on the system by the weight is compensated for by the current through the coil. The current is proportional to the force and is measured by a measurement resistor, transformed into a digital signal by an analog-digital converter and further processed in a signal processing system.[8] In weighing mode there are 4load bridges which is fixed on back side of the toughness rounded glass plate that bridges connected to integrated circuit unit which is directly connected to copper coated electronic plate in which the CR2032 button cell unit, display unit, display LED white plate, rubber for support display unit, pin button all these parts are connected on copper circuit plate after the compilation of circuit the human body stands on the rounded glass plate, the bridges load sensor is automatically on and human body weighing is started which is measure by load bridges and balancing weight of human body is shown on stable blinking in display unit in KG and that weight of human body is fill in the system of quantum mode biosensor before the analysis started, shown in **Fig.9**

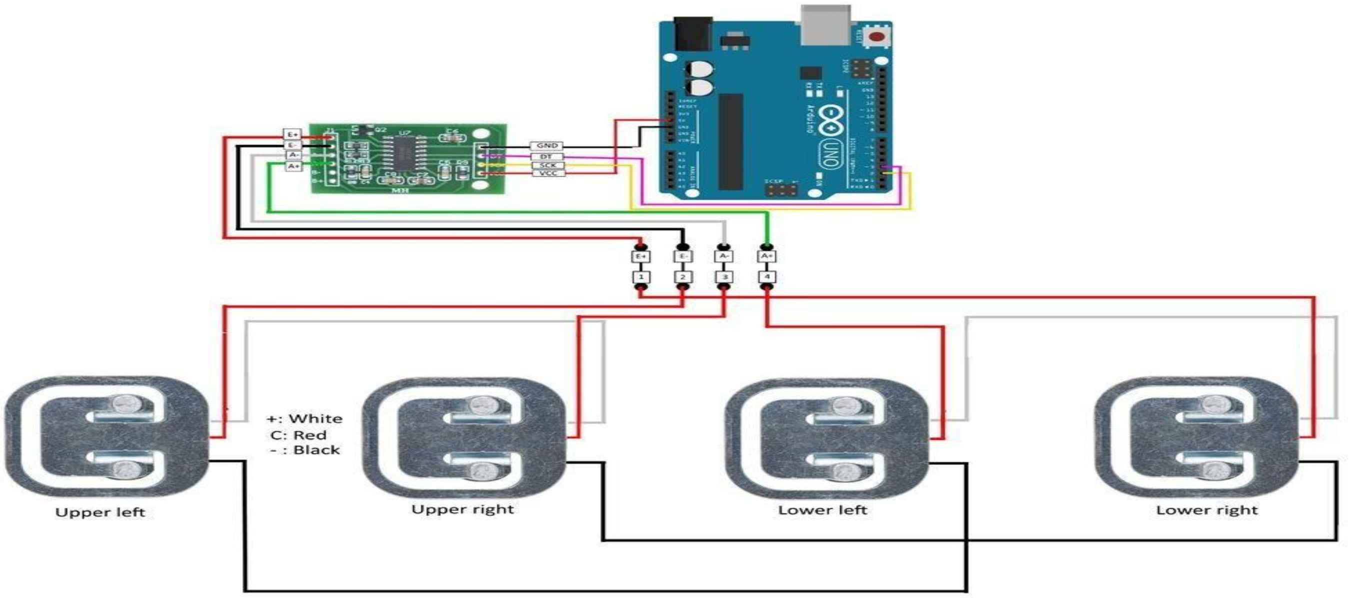

Fig.9: Circuit diagram of weighing mode sensor

III. RESULTS AND DISCUSSION RESULTS

In the detection of human health via quantum physical biosensor, there are more than 30 analysis are obtained in results in which we take main parameters and the analysis of patient reports are shown in graphical representation such as cardiovascular and cerebrovascular analysis are shown in **Fig.10** in which blood viscosity is the basic indicator of hemorheology refers to the internal friction among blood molecule. Cholesterol crystal, blood fat abnormality is divided into primary abnormity and secondary abnormity, primary refers to hyperlipoproteinemia & secondary refers to hyperlipidemia. Vascular resistance increase is in direct proportion to the length of blood vessels, and is in inverse proportion to the calibre of blood vessels. Vascular elasticity refers to the expansion extent of arterial vascular elasticity during systolic ejection. Myocardial blood demand is the blood demand per minute of coronary artery perfusion of heart. Myocardial blood perfusion volume is the actual blood demand per minute of coronary artery perfusion of heart. Myocardial oxygen consumption is the millilitre value of oxygen consumption of heart per minute. Stroke volume is the blood volume output by the heart in beat each time. Left ventricular ejection impedance reflects the indicators of resistance status of the left ventricular outflow channel. Left ventricular effective pump power reflects the contraction strength of effective stroke of blood of the left ventricle. Coronary artery elasticity is the source of power of life is the heart, namely three blood vessels respectively located in the heart, can supply blood and oxygen to her. Coronary perfusion pressure is the pressure of coronary artery of heart in blood supply is influenced by diastolic blood pressure and left atria pressure. Cerebral blood vessel elasticity, the brain artery or the neck artery controlling the brain has lesion, which leads to disorder of intracranial blood circulation and damage of brain tissue. Brain tissue blood supply mainly depends on the brain artery or the neck artery controlling the brain.

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(Cardiovascular and cerebrovascular) Data Analysis

Name: ANJANI SRIVASTAVA Sex: Male Age: 36
Figure: Standard body weight(170cm,69kg) Testing Time: 2019-04-18 11:46

Actual Testing Results

Testing Item	Normal Range	Actual Measurement Value
Blood Viscosity	48.264 - 65.371	53.045
Cholesterol Crystal	56.749 - 67.522	61.530
Blood Fat	0.481 - 1.043	1.029
Vascular Resistance	0.327 - 0.937	0.518
Vascular Elasticity	1.672 - 1.978	1.173
Myocardial Blood Demand	0.192 - 0.412	0.257
Myocardial Blood Perfusion Volume	4.832 - 5.147	4.338
Myocardial Oxygen Consumption	3.321 - 4.244	4.951
Stroke Volume	1.338 - 1.672	0.321
Left Ventricular Ejection Impedance	0.669 - 1.544	1.956
Left Ventricular Effective Pump Power	1.554 - 1.988	1.205
Coronary Artery Elasticity	1.553 - 2.187	2.155
Coronary Perfusion Pressure	11.719 - 18.418	13.262
Cerebral Blood Vessel Elasticity	0.708 - 1.942	1.224
Brain Tissue Blood Supply Status	6.138 - 21.396	5.995

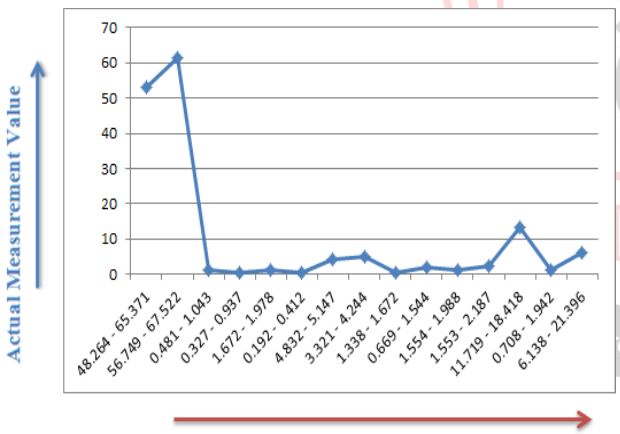

Fig.10: Graphical analysis of cardiovascular and cerebrovascular

Gastrointestinal function analysis are shown in **Fig.11** in which pepsin secretion coefficient, the stomach has two kinds of duct glands, where one is gastric gland which mainly secretes digestive juice and the other is cardiac gland which mainly secretes mucus to protect the mucosa of the cardia. Gastric peristalsis function coefficient, there are oblique, circular and longitudinal smooth muscles on the gastric wall, and their contraction and relaxation make the stomach have the capability of peristalsis. Gastric absorption function coefficient, the gastric gland in mucosa secretes a kind of colorless and transparent acidic gastric juice, and the gastric gland of an adult can secrete 1.5-2.5 liters of gastric juice each day, gastric juice contains three main components, namely pepsin, hydrochloric acid and mucus. Small intestine peristalsis function coefficient is in a unique movement style, being an alternating motion of rhythmic contraction and relaxation with circular muscle as the main, it promotes chime and digestive juice to be fully mixed for chemical digestion. Small intestine absorption function coefficient it plays major role such as the absorption of sugar, the absorption of protein, the absorption of fat, the absorption of water.

(Gastrointestinal function) Data Analysis

Name: ANJANI SRIVASTAVA Sex: Male Age: 36
Figure: Standard body weight(170cm,69kg) Testing Time: 2019-04-18 11:46

Actual Testing Results

Testing Item	Normal Range	Actual Measurement Value
Pepsin Secretion Coefficient	59.847 - 65.234	60.128
Gastric Peristalsis Function Coefficient	58.425 - 61.213	57.884
Gastric Absorption Function Coefficient	34.367 - 35.642	32.984
Small Intestine Peristalsis Function Coefficient	133.437 - 140.476	129.102
Small Intestine Absorption Function Coefficient	3.572 - 6.483	2.705

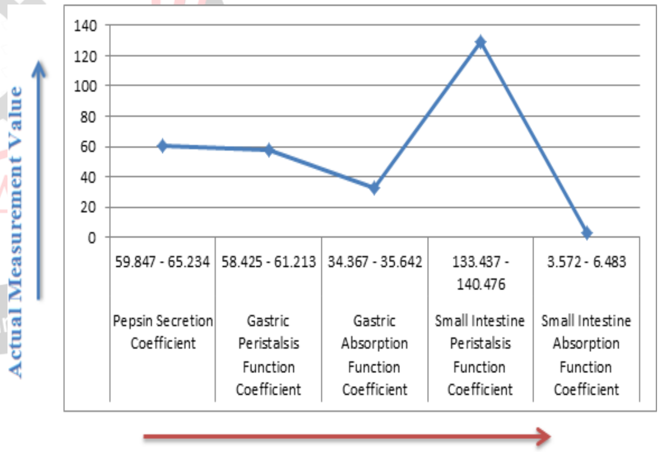

Fig.11: Graphical analysis of gastrointestinal function

Liver function analysis are shown in **Fig.12** in which protein metabolism, protein in food is digested and absorbed by the intestinal tract to be sent to the liver for conversion and reorganization, different types of amino acids are metabolized to manufacture a variety of proteins for the need of cells according to the body's need. Energy production function, after carbohydrates are digested, the liver will carry out powdered sugar metabolism to produce energy for the need of cells. Detoxification function, the liver as well as detoxifying enzyme carry out detoxifying enzymes carry out detoxification to decompose the hazardous substances (alcohol and ammonia) into harmless substances such as urea, water and CO_2 to be excreted out

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of the body. Bile secretion function, bile is the end product of metabolism in their liver, which has the role of fat digestion and promotes the body to absorb fat-soluble vitamins A, D, E and K. The overmuch bile will be sent to gallbladder for standby. Liver fat content, if the liver fat content is more than 5% of wet weight or over 1/3 liver cells of per unit area on liver biopsy have lipid droplets under a microscope, the liver is called as a fatty liver.

(Liver function)
Data Analysis

Name: ANJANI SRIVASTAVA Sex: Male Age: 36
Figure: Standard body weight(170cm,69kg) Testing Time: 2019-04-18 11:46

Actual Testing Results

Testing Item	Normal Range	Actual Measurement Value
Protein Metabolism	116.340 - 220.620	65.015
Energy Production Function	0.713 - 0.992	0.889
Detoxification Function	0.202 - 0.991	0.088
Bile Secretion Function	0.432 - 0.826	0.753
Liver Fat Content	0.097 - 0.419	0.122

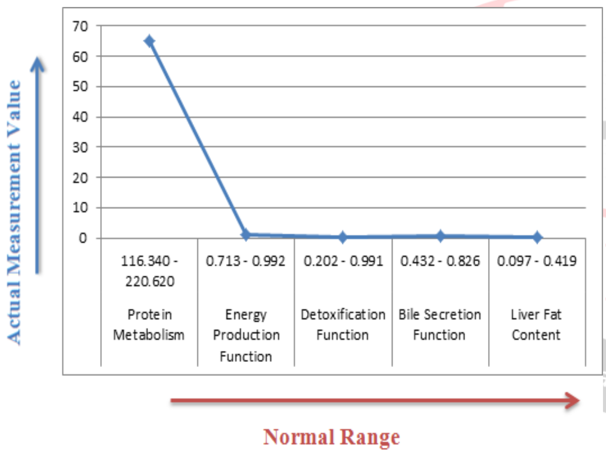

Fig.12: Graphical analysis of liver function

Kidney function analysis in which urobilinogen index, uric acid index, blood urea nitrogen index, proteinuria index, vital capacity are shown in **Fig.13**

(Kidney function)
Data Analysis

Name: ANJANI SRIVASTAVA Sex: Male Age: 36
Figure: Standard body weight(170cm,69kg) Testing Time: 2019-04-18 11:46

Actual Testing Results

Testing Item	Normal Range	Actual Measurement Value
Urobilinogen Index	2.762 - 5.424	7.547
Uric acid Index	1.435 - 1.987	2.528
Blood urea nitrogen(BUN) Index	4.725 - 8.631	9.510
Proteinuria Index	1.571 - 4.079	6.356

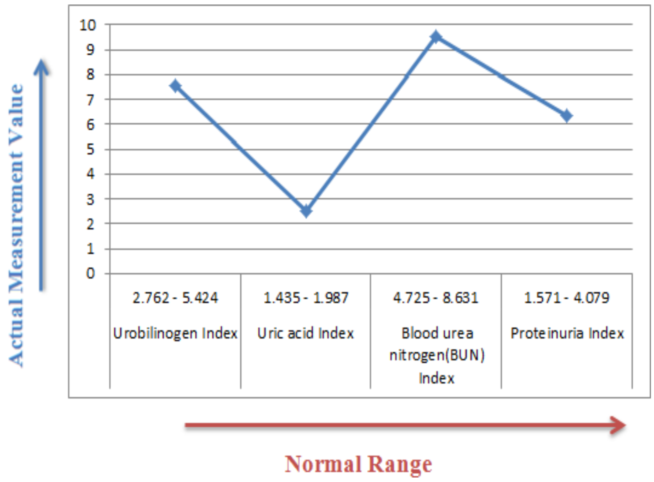

Fig.13: Graphical analysis of kidney function

Lung function analysis in which vital capacity, total lung capacity, airway resistance, arterial oxygen content are shown in **Fig.14**

(Lung function)
Data Analysis

Name: ANJANI SRIVASTAVA Sex: Male Age: 36
Figure: Standard body weight(170cm,69kg) Testing Time: 2019-04-18 11:46

Actual Testing Results

Testing Item	Normal Range	Actual Measurement Value
Vital Capacity VC	3348.000 - 3529.000	3016.785
Total Lung Capacity TLC	4301.000 - 4782.000	4112.785
Airway Resistance RAM	1.374 - 1.709	1.914
Arterial Oxygen Content PaCO2	17.903 - 21.012	20.076

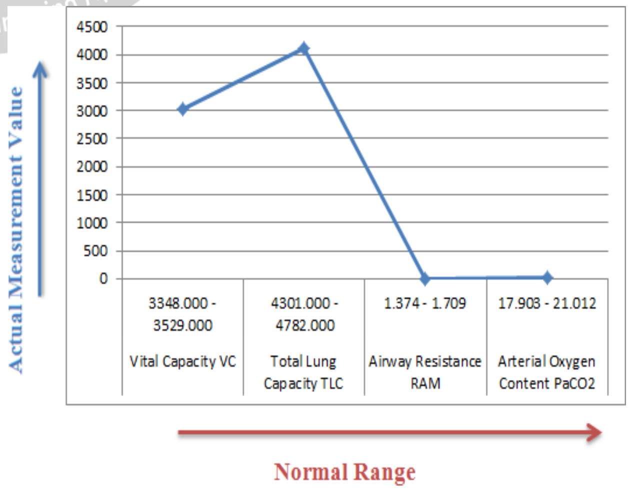

Fig.14: Graphical analysis of lung function

Blood sugar analysis are shown in **Fig.15** in which coefficient of insulin secretion, insulin is a kind of protein hormone. Pancreatic B-Cells are secreted into insulin in the body. Beside the duodenum of the body, there is a long-shaped organ called as pancreas. Many cell masses are

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scattered in the pancreas, and the cell mass is called as pancreatic islet. There are about 100 to 200 million pancreatic islets in the pancreas. Blood sugar coefficient refers to the glucose in blood, other types of sugar such as disaccharide and polysaccharides can be called as glucose after they are converted into glucose to enter into blood. Urine sugar coefficient refers to the sugar in urine, mainly referring to the glucose in urine. The healthy human body's urine sugar is little, it cannot be measured by the general method, so the healthy human body's urine sugar is negative or there is no sugar in urine.

(Blood sugar)
Data Analysis

Name: ANJANI SRIVASTAVA Sex: Male Age: 36
Figure: Standard body weight(170cm,69kg) Testing Time: 2019-04-18 11:46

Actual Testing Results

Testing Item	Normal Range	Actual Measurement Value
Coefficient of Insulin Secretion	2.967 - 3.528	3.793
Blood Sugar Coefficient	2.163 - 7.321	6.765
Urine Sugar Coefficient	2.204 - 2.819	2.093

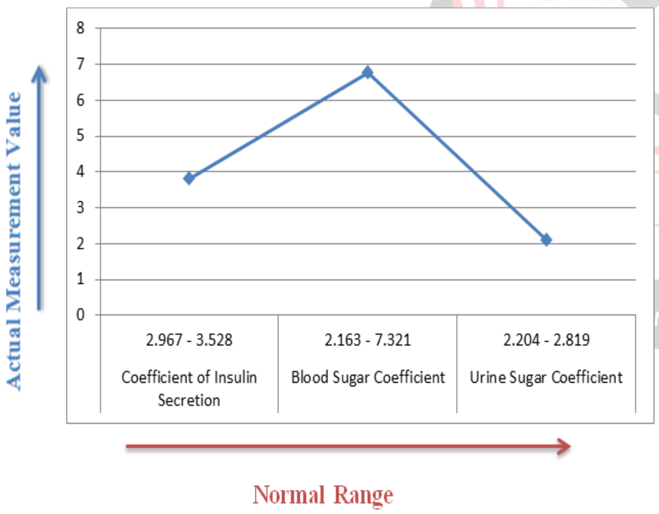

Fig.15: Graphical analysis of blood sugar

There is an another parameters which is discuss in thesis such as immune system analysis in which lymph node index, tonsil immune index, bone marrow index, spleen index, thymus index, immunoglobulin index, respiratory immune index, gastrointestinal immune index, mucosa immune index. Blood lipids in which blood viscosity, Total Cholesterol (TC), High- Density Lipoprotein (HDL-C), Low-Density Lipoprotein (LDL-C), Meutral Fat (MB), Circulating Immune Complex (CIC). Pulse of heart and brain Stroke Index, Stroke Volume (SV), Heart Peripheral Resistance (TRR), Vascular Resistance, Blood Vessel Elasticity (AC), Pulse Wave Coefficient K, Cerebrovascular Blood Oxygen Saturation(Sa), Cerebrovascular Blood Oxygen Volume(CaCO2), Cerebrovascular Blood Oxygen Pressure(PaO2). Thyroid in which Free thyroxine (FT4), Thyroglobulin, Anti-thyroglobulin antibodies, Three triiodothyronine (T3).

IV. DISCUSSION

There is no such device has been made which can give more than 30 parameters in one single device because of this we have made a physical biosensor in which includes mainly three types of mode, quantum, infrared and weighing mode which analysis the human health so that we can get the reports within 59seconds or a person can do their health analysis at home as it is portable. The main motto for making this biosensor is to give the results fast because as we go for the tests in laboratory it takes 2-3 days for the report as well as it will be costly but our quantum physical biosensor gives results within 59 seconds and cheaper as compared to pathology laboratory.

V. CONCLUSION

One of the major quantum based physical biosensor development is the use of detection of health analysis of human body in which there are more than 30 parameter are obtained such as cardiovascular function, liver function, gastrointestinal function, pancreatic function, thyroid analysis, etc. In this quantum physical biosensor, it detects the electromagnetic waves emitted from the cells of human body which is observed by biosensor in 59seconds in which 25million cells are splitting up every second in human body so, in 59seconds there are [25million cells are multiplied by 59seconds i.e.., {as cardinal number 25,000000 × 59 = 1,475,000,000 cells}] are splitting and the electromagnetic waves are emitted by these (1,47,000,000 cells) are observed by quantum biosensor, it provides signals to receiver for analysis of health data which is obtained in system of tabular form.

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