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ULTRA VIOLET LIGHT MODULATED SOFT X-RAYS FOR MEDICAL DIAGNOSTICS, REPAIRS, AND/OR MODIFICATIONS

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To my dear wife, Velma, with all my love, gratitude, and devotion

ABSTRACT

Ultra-violet light modulates a soft x-ray in a mixer device which x-ray then is focused by an aiming device into a patient to a tiny volume of intense sonic energy generated by and focused by an external matrix of sonic transducers controlled by a computer. At that internal tiny volume of intense sonic energy, herein called an internal tiny volume of interest, the UV to perform tasks is demodulated from the x-ray via radically differential non-linear adiabatic dielectric constants in the volume. Two systems are described, both use the same common instrument components, for use on a medical patient without invasive surgery or fiber-optics. One system is used for internal diagnostics. A second for internal repairs, and/or modifications. It is best if two persons operate the systems, a Medical Doctor and a technician.

PRIOR ART REFERENCES SUPPORTING, IN WHOLE OR IN PART, THEORETICAL METHODOLOGIES AND SYSTEMS INCORPORATED HEREIN

Frank Boring Fitzgerald, USA Patent Application number US11/880,031 of July 20, 2007. USPTO Pub. No. US 2009/0022256 A1 of Jan. 22, 2009.

<> USPTO caused C.F.R. abandonment of above Patent Application due to USPTO internal failure to properly route and handle applicant's written correspondences and written petitions. That USA PA may be seen at www.wbabin.net/physics/fitzgerald3.pdf

<> Failure of USPTO to follow legal procedures is the reason this scientist no longer trusts the USPTO to protect intellectual property and will never ever again apply for a PA in the USA instead I shall rely upon copyright to protect my intellectual property.

That PA disclosed a process of demodulating UHF EM in collapsing adiabatic sonic bubbles' shockwaves in the fusion reactor's reaction gap. That process of UHF EM demodulation was said to occur because of the non-linearity of adiabatic collapsing of bubbles in the reaction gap, particularly, at the description of non-linear violent changes occurring in the collapsing bubble's dielectric constants permitting demodulation of the passing thru UHF EM wave. That referenced demodulation process is utilized herein but at a much lower energy level. It is not necessary for fusion to occur here in the mixer device in order to achieve x-ray UV modulation, or, UV demodulation and remodulation of the x-ray in the patient internal tiny volume of interest, and demodulation of the UV external to the patient for feeding the computer. Also, the bubbles in the mixer device need not be perfectly spherical during such collapse as was required to achieve fusion in the above mentioned Patent Application.

The herein described overall design methodologies utilize certain technologies which themselves each separately have been known in the prior art for some time but which when uniquely put together, with some additions and modifications, as in the herein described particular instrumentation system, such certain of the prior art technologies may now be utilized in a together manner which overall interactive details were not previously obvious to researchers and inventors versed in the art.

The art of a using precise frequency UV has been known for some time, and used in nuclear countries as one form of Uranium enrichment, to separate from other Uranium isotopes in Uranium Hexafluoride, UF_6, or Uranium Tetrafluoride, UF_4, 100% pure U^{238} via one precise UV frequency, or, 100% pure U^{235} via another precise UV frequency. For a given isotope each fluoride compound requires a different precise UV.

The art of intensity (amplitude) modulation of x-rays has been know for some time. Herein, it is the x-ray, x1, UV1 amplitude modulation technique in the mixer device and techniques of UV1 demodulation from x-ray, x2, in tiny spherical energy volumes inside a patient and with remodulation of x-ray, x2 to become x3, in those same internal tiny volumes which techniques together are unique herein.

The art of using precise frequency UV laser to modify DNA is now known.

The art of using a precise UV laser frequency in conjunction with a visible laser to re-attach a detached retina is well know.

The art of locating patient internal tiny volumes of interest via analyzed monitored sonar is well known. It is computer monitoring of a particular patient internal tiny spherical energy volume of interest via a sonar matrix of data which is unique herein.

The art of UV spectrum scanning of patient tissues, utilizing fiber-optic reflection spectrum peaks to diagnose the results of reflection, is well know.

The art of using UV tunable laser in the spectrum scanning mode via fiber-optics to formulate a lung cancer diagnosis and of precise cancer location and complexity has been known for some time and has been published in medical papers. [2]

The art of using body sonar to formulate computer diagnosis and display of precise locations and complexity of patient internal tiny volumes of interest has been known and used in well equipped hospitals. [3]

SUMMARY

The two systems herein are described by a theoretical methodology and use a number of components in common:

1. <u>Computer and touch-screen monitor</u>. Programmable to accept multiple data, process, coordinate and control operations of total components of the system and display via a touch-screen monitor. Holographic imaging can also be used.

2. <u>Low frequency x-ray generator, x1</u>. Used as carrier for UV1.

3. <u>Excimer tunable ultra-violet laser, UV1 generator</u>. In the **first system**, capability of a spectrum scanning output in the UV. In the **second system**, capability of an output in the UV at pre-selected very precise frequencies. The UV1 generator output time-on is synchronized with the time-on output of the x-ray, x1, generator. Both UV1 and x-ray, x1, are also synchronized with the ultrasound from the sonic transducers. All are computer controlled.

4. Mixer device. Both UV1 and x-ray, x1, follow along the same identical path thru the mixer gap of the mixer device. Mixer device adiabatic collapsing bubbles are produced similarly to this inventor's Patent Application [1], **but** such mixer device herein would be operated well below fusion energies with no need for fail-safe nor UHF EM provisions. In the mixer device in synchronization with its sonic wave, expansion of a bubble first takes place followed by collapse taking place adiabatic. This provides non-linearity of dielectric constants of the bubble's internal spherical shockwave required to allow interactive mixing amplitudes of the passing x-ray and UV photons. UV1 modulated x-ray, x1, exits as x2 from the mixer device. Other type of mixer devices are available producing the same results.

5. Aiming and focusing device. The UV1 modulated x-ray, x2, is aimed and focused at a patient's pre-selected internal tiny volume of interest. Aiming and focusing are computer pre-selected and controlled. The technician makes the necessary entries.

6. Matrix of sonic transducers. Externally attached to the patient, something like a tight-fitting diver's suit, near the internal tiny volume of interest. In synchronization with the mixer device's sonic frequency and synchronized with time-on of the x-ray and UV1 generators is this computer controlled matrix of sonic transducers which sonic outputs are all computer phased, aimed, and focused at a patient internal tiny volume of interest. The transducers are pulsed for transmission and reception like sonar so the computer is better able to aim the sonic output at the internal tiny volume of interest. In the sonic and x-ray focused tiny volume of interest is demodulated UV1 from x-ray, x2.

Up until now, the two systems are identical in components and their use. But in the **first system**, the spectrum scanning UV1 once demodulated in the tiny volume of interest now reflects with "peaks" in the spectrum to become the diagnostic UV2 which remodulates x-ray, x2, to become x3. In the **second system**, the demodulated precise frequencies of UV1 are designed to effect repairs, and/or modifications to the patient internal tiny volume of interest. Such UV1 produces reflections, UV2, which also modulate x2 to become x3.

7. Demodulator of x3. X-ray, x3, having left the patient, is demodulated which then feeds data to the computer. The computer analyzes those demodulated signals going only to the UV2 spectrum reflection "peaks" and their meaning for displaying the results for a medical diagnostics via a touch-screen monitor, or, the computer analyzes demodulated specific pre-selected UVs in order to monitor repairs, and/or modifications taking place in real-time.

BRIEF DESCRIPTION OF THEORETICAL SYSTEM AND DESIGN METHODOLOGIES

In the two systems, sonic energy from the matrix sonic transducers arrives in the patient focused at a given tiny volume of interest at a sufficient level to cause production of radically non-linear changes in the tiny volume's dielectric constants resulting in its ability to demodulate UV1 from x-ray, x2, and to re-modulate with UV2 resulting as x-ray, x3. **First system** describes accomplishing medical diagnostics.

Second system describes accomplishing precise internal repair and/or modification tasks in the tiny volume of interest using the UV delivery system same as above but which uses one or more pre-selected precise UV1 frequencies, instead of UV1 spectrum scanning, to AM x-ray, x1, in the mixer device, to become x-ray, x2, which is focused in the aiming device to pre-selected tiny sonic caused spherical energy volumes of interest inside the patient, in like fashion as above, but which tasks would otherwise require invasive surgery or penetrating fiber-optics to accomplish.

For the **first system**, medical diagnostics, within a medical patient, both spectrum scanning UV modulated x-ray, x2, and ultrasound are aimed and focused by control of a computer at a given tiny spherical energy volume of interest. With this arrangement, as one of many examples, the tiny volume of interest can be moved about inside the patient for general scanning producing a picture similar to CT, PET, and MRI, depending on computer analysis of reflected UV and on pre-programming thereby. The saved computer file includes a 4D presentation for driving a holographic image as a 3D motion picture.

The intensity of ultrasound is not strong enough as to cause bubbles of gases or liquids but strong enough so as to cause non-linear adiabatic layered concentric spheres of energy resulting in non-linear dielectric constants changes in the volume of interest needed for UV demodulation and remodulation of the x-ray.

In a given sonic tiny spherical energy volume of interest, UV1 modulated x-ray, x2, encounters layers of radically differential non-linear adiabatic dielectric constants of the tiny spherical energy volume caused by cycling of ultrasound of sufficient intensity focused from a matrix of sonic transducers in a holder sheet attached to outside surface of patient to produce a radius cycling tiny sphere of energy at the tiny volume of interest with the most radical layer at the surface of the energy sphere.

In the **first system**, spectrum scanning UV1 is first demodulated from x-ray, x2, with demodulation the strongest at surface layer of the energy sphere, then develops UV2 spectrum "peak" reflections which depend upon atomic and molecular consistency of the surface of the tiny volume of spherical energy. These UV2 spectrum peaks, plus some original scanning UV1, both remodulate x-ray, x2, to become x-ray, x3, via the same spherical volume of energy's non-linear dielectric constants as demodulated UV1.

Such remodulated x-ray, x3, then exits the patient for detection, demodulation, computer data process, display on a touch-screen monitor for a complete **real-time** diagnostics.

The Doctor does not have to wait for lab test results, which in some cases could take hours, days, or weeks. At direction of the Doctor, the computer can be programmed by the technician to scan for all possible patient problems and display those on the screen. All known pathogens contained in the tiny volume of interest are then displayed by the computer in milliseconds. The tiny volume of interest could be in bone, tissue, blood, organ, heart, brain, body cavity, any part of the body.

For purposes of specific diagnostics of a precise tiny volume of internal interest, at direction of the Doctor the computer is programmed by the technician to reject all detected extraneous signals generated inside a patient which modulate x-ray, x2 to become x3.

For the purpose of total patient general diagnostics during body scans, the computer is programmed to compute all detected extraneous signals then select specific signals in like fashion to MRI. This system of diagnostics does not use a magnet but uses UV and low frequency x-ray known as soft x-ray. Time of exposure depends upon total system performance but should be very short, milliseconds.

The first overall theoretical system performs this patient monitoring, diagnostics and starts with generation of x-ray, x1, as carrier for UV1 modulation. X-ray, x1, passes between two narrow spaced parallel plates in the mixer gap of a mixer device. One such device is similar to that of this inventor’s fusion reactor [1]. Along with that x-ray, x1, in the same direction path thru the mixer gap is introduced the modulating UV1 of interest which can be spectrum scanning UV1 or one or more pre-selected precise UV1 frequencies. The UV1 amplitude modulates x-ray, x1, to become x2. X1 acts as carrier for mixing in presence of non-linear dielectric constants of the mixer gap bubbles of such device. From such device the UV1 modulated x-ray, x2, is aimed and focused into the patient at a given internal tiny volume of interest where is also focused ultrasonic sound from a matrix of phased sonic transducers, externally attached to the patient, with sufficient energy arriving at the focus tiny volume to create non-linearity of the tiny energy sphere volume's dielectric constants. The patient’s internal energy spherical tiny volume of interest is then able to demodulate the UV1 from the x-ray carrier, x2. All of these happenings are controlled via a computer and happen in milliseconds.

For medical monitoring, diagnostics, the UV1 is generated in the spectrum scanning mode.

For medical repairs and/or modifications without invasive surgery or fiber-optics, the UV1 is generated in one or more pre-selected precise frequencies mode as part of the overall instrumentation complex.

While in the tiny volume of interest, spectrum scanning UV1 "peaks" in reflection intensity at particular frequencies unique to the atomic and molecular structures of the tiny volume UV1 encounters to become UV2. These spectrum peaks, UV2, along with some intensity of the original spectrum scanning UV1 both remodulate x-ray, x2, becoming x-ray, x3. X-ray, x3, leaves the patient for external detection, demodulation, and computer analyzed for displaying the UV2 spectrum peaks on a touch-screen monitor. In the repair and/or modifications mode, the UV1 precise frequencies reflections, now UV2, remodulate x-ray, x2, becoming x-ray, x3, which is detected, demodulated and displayed. By computer comparison over time, UV2 will show on the display the course of repairs and/or modifications taking place in real-time.

3D diagnostic or repair and/or modification viewing of the internals of the patient can be accomplished by displaying a computer modification of alternating received peaks of UV2 spectrum and UV2 precise frequencies, all the while the tiny volume of interest, focused x-rays, and focused ultrasound are computer pre-programmed to move in a 3D raster scan mode monitored, directed, and controlled via the computer at instructions of the Doctor and entered by the technician. 4D monitoring can take place by displaying the 3D views recorded over time but one view at a time in synchronized sequence. This allows, but is not limited to, such things as blood flow versus time and digestive track activity versus time. Holographic imaging would be preferred in certain cases.

The second overall theoretical system performs selected tasks of patient internal repairs and/or modifications via UV1 demodulation of x-ray, x2. The UV1 generator mode is changed from spectrum scanning to a mode of generating precise pre-selected UV frequencies to accomplish such tasks.

UV2, in the precise frequencies mode, modulating x-ray, x3, follows repairs and/or modifications taking place and can be displayed. With computer programming to allow adjacent volumes to be displayed in a 3D scan during repairs and/or modifications gives the Doctor and the technician the opportunity to judge and control progress in real-time.

Some examples of such second methodology are: repairs, and/or modifications to organs, bone, cartilage, and tissue; beneficial repair and/or modification of DNA; reconstruction of damaged brain, organs, limbs, spinal column, and nerves; destructive modification of tumors, arthritis, disease agents both bio and chemical, and parasites; correction of deformities; beneficial repair and/or modification of immune system, and toxin destruction; destruction of blood clots; opening up closed blood vessels, etc. This performance list is but a tiny part of a vastly longer list well beyond the scope of this presentation.

These theoretical technologies are designed to diagnose basic causes of symptoms; to effect repairs and/or modifications; not merely to alleviate symptoms. To alleviate symptoms of pain, a patient could take two aspirins and call the doctor in the morning.

DETAILED DESCRIPTION OF THEORETICAL SYSTEM AND DESIGN METHODOLOGIES

DRAWING 1, page 12**,** is an overall block diagram of instrumentation system and design methodologies operating in the UV spectrum scanning mode for UV delivery, production of UV reflection spectrum peaks, recovery, and diagnostics of the patient, at an internal tiny volume of interest. Or, it is an overall block diagram of system operating in the pre-selected precise UV frequencies mode for recovery of what is taking place while system is in the repair, and/or modification mode. The difference is attributed to **(4)** COMPUTER control of **(6)** TUNABLE UV1 LASER IN SPECTRUM SCANNING MODE versus **(13)** TUNABLE UV1 LASER IN PRECISE FREQUENCIES MODE.

(4) COMPUTER controls everything which results of control are displayed on **(3)** TOUCH-SCREEN MONITOR.

From **(1)** X-RAY GENERATOR x1, AND ITS internal FOCUSING DEVICE, x1 enters **(2)** MIXER DEVICE which also has input from **(6)** TUNABLE UV1 LASER IN SPECTRUM SCANNING MODE, or, **(13)** TUNABLE UV1 LASER IN PRECISE FREQUENCIES MODE, depending on selection of the **(4)** COMPUTER programmed by the technician.

Because of the non-linear adiabatic changes taking place in **(2)** MIXER DEVICE, x1 from **(1)** X-RAY GENERATOR, x1, and UV1 from **(6)** TUNABLE UV1 LASER IN SPECTRUM SCANNING MODE, or, **(13)** TUNABLE UV1 LASER IN PRECISE FREQUENCIES MODE, are mixed resulting in an output **(5)** UV1 AMPLITUDE MODULATED x2.

Output from **(5)** UV1 AMPLITUDE MODULATED x2 of **(2)** MIXER DEVICE is focused by **(7)** x2 FOCUS DEVICE to arrive at **(10)** PATIENT'S INTERNAL TINY VOLUME OF MEDICAL INTEREST.

From **(9)** MULTIPLE ULTRASOUND TRANSDUCERS AND FOCUSING DEVICES ultrasound arrives at **(10)** PATIENT'S INTERNAL TINY VOLUME OF MEDICAL INTEREST where the intensity of the ultrasound produces in **(10)** non-linear dielectric constants which demodulates **(6)** TUNABLE UV1 LASER IN SPECTRUM SCANNING MODE, "lighting up" **(10)** causing "peaks" in that UV1 reflection spectrum. Or, **(13)** TUNABLE UV1 LASER IN PRECISE FREQUENCIES MODE is demodulated in **(10)** non-linear dielectric constants which demodulation reflects during UV1's repairs and/or modifications. This gives the Doctor and the technician opportunity to judge if the UV is working correctly. Monitoring the actions is vital to provide a fail-safe system. **(4)** COMPUTER has a program automatically and continuously monitoring the goings on to give a warning if something is detected out of place. The technician can then run a manual instruction to display the problem and offer a suggestion to **(4)** for correction.

(11) UV2 MODULATED x2 LEAVES PATIENT and arrives at **(12)** DETECTION OF UV2 MODULATED x2. Output of **(12)** is inputted to **(4)** COMPUTER and viewed on **(3)** TOUCH-SCREEN MONITOR.

<u>Drawing 2</u>, page 13**,** is an overall block diagram of a typical sonic bubble **(2)** MIXER DEVICE, similar to this inventor's sonic fusion reactor [1], used herein to accomplish UV1 modulation of the low frequency x-ray, x1. Other types of **(2)** MIXER DEVICE can be used herein.

Seen is **[14]** casing which houses the main chamber of the **(2)** MIXER DEVICE. Attached to **[14]** casing is **[32]** computer for controlling **(2)** MIXER DEVICE. **(1)** Mixer gap thru which, passes either from side-to-side or end-to-end, both x1 from **(1)** X-RAY GENERATOR x1 and its internal focusing device and UV1 from **(6)** TUNABLE UV LASER IN either SPECTRUM SCANNING MODE or **(13)** PRECISE FREQUENCIES MODE. Bubble action in the mixer gap is generated by ultrasound of the two quartz crystals **[2]** and **[3]**. Both sides of **[2]** crystal are plated **[10]** and **[11]** and both sides of **[3]** crystal are plated **[12]** and **[13]**.

Attached to the crystal plates **[10]**, **[11]** **[12]**, and **[13]** are leads running to a **[32]** computer attached outside the **(2)** MIXER DEVICE to control **(2)** action.

[4] and **[5]** anchors hold **[3]** crystal in place while **[8]** and **[9]** anchors are adjustable for holding **[2]** crystal in place. Adjustments to **[8]** and **[9]** are make to maximize mixer action.

Circulating 100% pure D2O enters **[6]** input and exits **[7]** output. Not shown is another chamber which processes the D2O and causes a circulation thru the main chamber.

[14] casing has a UV optically flat quartz crystal window to allow UV1 from **(6)** TUNABLE UV1 LASER IN SPECTRUM SCANNING MODE or **(13)** TUNABLE UV1 LASER IN PRECISE FREQUENCIES MODE to enter the main chamber's mixer gap.

The **[32]** computer has **[34]** touch-screen monitor and **[33]** on-off push switch.

<u>**Drawing 3**</u>, page 14**,** is a block diagram of the matrix sonic transducers attached to the patient showing them in action.

(9) MATRIX OF ULTRASOUND TRANSDUCERS AND FOCUSING DEVICES is not limited in number of units to just a few transducers, as shown, so long as **(9A)** MULTIPLEX INTERFACE BETWEEN MATRIX OF SONIC TRANSDUCERS AND **(4)** COMPUTER has enough inputs to match number of transducers and the **(4)** COMPUTER program is designed to handle the load.

Each transducer has its own input to **(9A)** MULTIPLEX INTERFACE BETWEEN MATRIX OF SONIC TRANSDUCERS. Output of **(9A)** feeds multiplexed signals to **(4)** COMPUTER where signals are processed, analyzed then feed to **(3)** TOUCH-SCREEN MONITOR.

The **(4)** COMPUTER program includes ability to analyze sonar reflections from all of the **(9)** MATRIX OF ULTRASOUND TRANSDUCERS AND FOCUSING DEVICES to avoid interference of patient internal discontinuities such as bone obstructions to high powered ultrasound emissions of the **(9)** transducers. If the program sees a bone obstruction via sonar reflection received from one or more **(9)** transducers, those **(9)** transducers are removed from the program instead the program directs ultrasound emissions to be focused to a given patient internal tiny volume of interest which does not include the bone obstruction in the result. That is, unless by-passed manually by the technician.

3D can be displayed where each picture pixel corresponds to a given tiny volume within the patient in a setting of many. This can be accomplished by a computer program, directed via **(3)** TOUCH-SCREEN MONITOR entered manually by the technician, which program moves the many transducers focus point in a 3D raster scan fashion. At the same time in synchronization is the output of **(7)** x2 FOCUS DEVICE following the lead of the ultrasound 3D raster scan. As the scan moves, the computer program enhances the resulting picture. The scan would be moving at greater than 120 frames per second to eliminate burr effects.

4D can be displayed where each 3D scan is recorded to be played back frame by frame in slow motion as directed via **(3)** TOUCH-SCREEN MONITOR entered manually by the technician.

References:

[1] USA Pat App US11/880,031 of July 20, 2007. USA Pub. No. US 2009/0022256 A1 of Jan. 22, 2009, can be viewed at: www.wbabin.net/physics/fitzgerald3.pdf Particularly therein, reference to non-linearity of adiabatic collapsing of sonic bubbles conducive to discussion herein, of UV amplitude modulation of x-rays, and, UV demodulation of such x-rays.

[2] St. Vincent Hospital Library, Billings, Montana, USA

[3] Ft. Harrison, Montana, USA, Veterans Administration Hospital has displayed on a monitor this patient's heart, its various parts and their enhanced activities in real-time via high resolution body sonar.

ADDITIONAL STUDY REFERENCES:

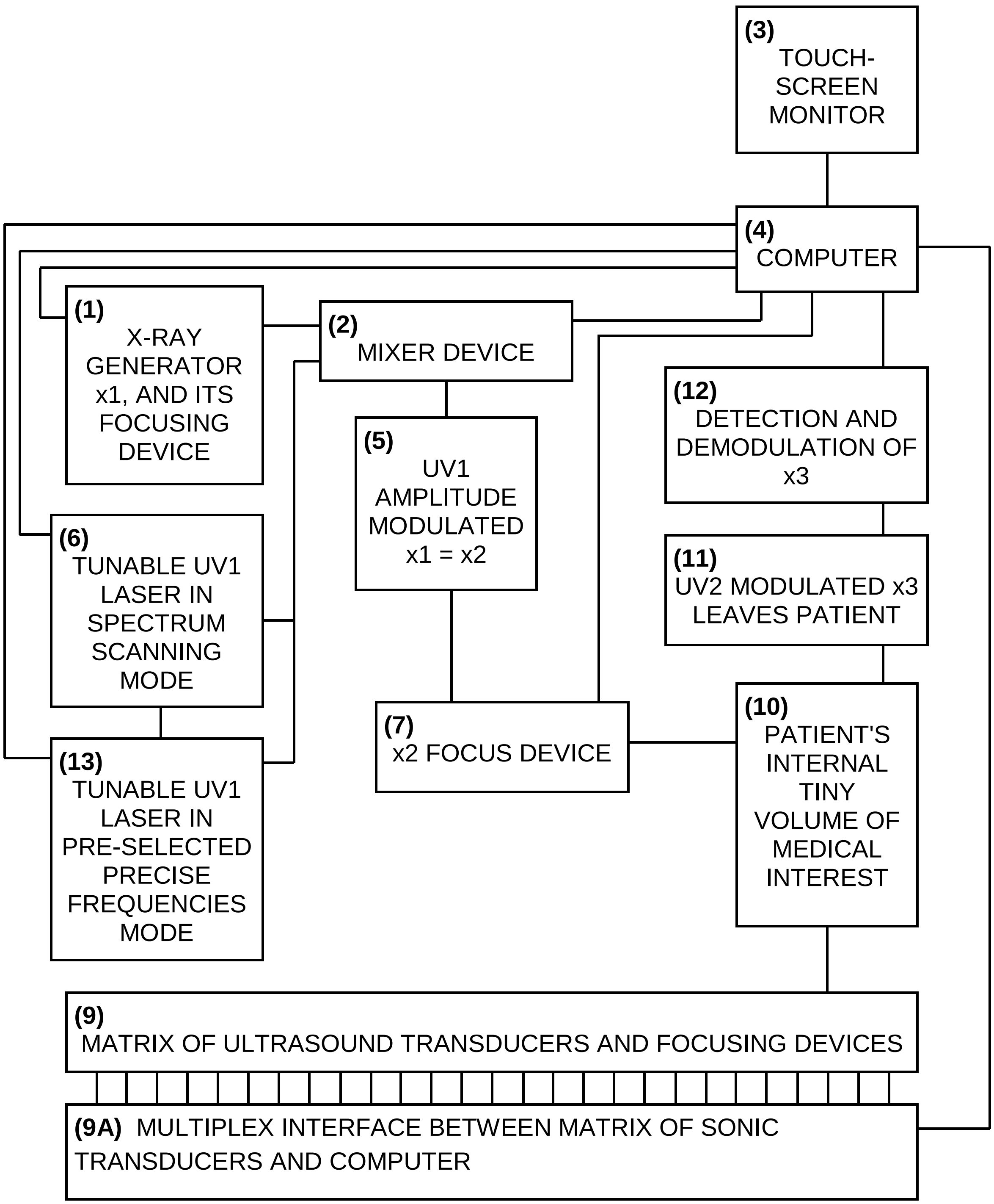
USPTO Application #: 20080043903
Image-guided intensity-modulated x-ray brachytherapy system

System and method for intensity modulated x-ray imaging
European Patent EP1642529

UV Modulated X-ray Source [UVMXS]
Electron intensity modulation for mixed-beam radiation therapy with an x-ray multi-leaf collimator. http://digitalcommons.library.tmc.edu/dissertations/AAI3287852

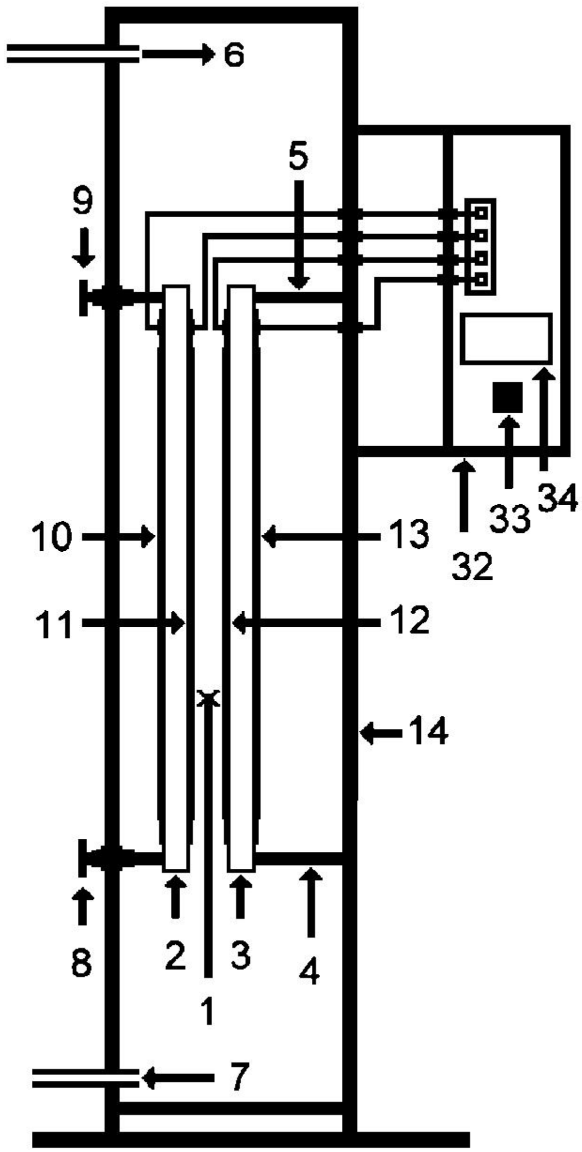
DRAWING 1

Overall block diagram of theoretical system and design methodologies operating **(6)** in the UV spectrum scanning mode for UV delivery, production of UV spectrum peaks, recovery, and diagnostics of the patient, at an internal tiny volume. Or, operating **(13)** in the pre-selected UV precise frequencies mode for UV delivery, recovery of reflection changes attributed to repairs, and/or modifications taking place in the internal tiny volume of interest.



DRAWING 2

Overall block diagram of a typical sonic bubble **(2)** MIXER DEVICE, such as in this inventor's sonic fusion reactor, which could be used herein to accomplish UV1 modulation of the first low frequency x-ray, x1.



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DRAWING 3

Overall block diagram of the matrix sonic transducers attached to the patient.