

## Patents by Inventor Hendricus G. Loos

Hendricus G. Loos has filed for patents to protect the following inventions. This listing includes patent applications that are pending as well as patents that have already been granted by the United States Patent and Trademark Office (USPTO).

### **Nervous system manipulation by electromagnetic fields from monitors**

**Patent number:** 6506148

**Abstract:** Physiological effects have been observed in a human subject in response to stimulation of the skin with weak electromagnetic fields that are pulsed with certain frequencies near  $\frac{1}{2}$  Hz or 2.4 Hz, such as to excite a sensory resonance. Many computer monitors and TV tubes, when displaying pulsed images, emit pulsed electromagnetic fields of sufficient amplitudes to cause such excitation. It is therefore possible to manipulate the nervous system of a subject by pulsing images displayed on a nearby computer monitor or TV set. For the latter, the image pulsing may be imbedded in the program material, or it may be overlaid by modulating a video stream, either as an RF signal or as a video signal. The image displayed on a computer monitor may be pulsed effectively by a simple computer program. For certain monitors, pulsed electromagnetic fields capable of exciting sensory resonances in nearby subjects may be generated even as the displayed images are pulsed with subliminal intensity.

**Type:** Grant

**Filed:** June 1, 2001

**Date of Patent:** January 14, 2003

**Inventor:** Hendricus G. Loos

### **NERVOUS SYSTEM MANIPULATION BY ELECTROMAGNETIC FIELDS FROM MONITORS**

**Publication number:** 20020188164

**Abstract:** Physiological effects have been observed in a human subject in response to stimulation of the skin with weak electromagnetic fields that are pulsed with certain frequencies near  $\frac{1}{2}$  Hz or 2.4 Hz, such as to excite a sensory resonance. Many computer monitors and TV tubes, when displaying pulsed images, emit pulsed electromagnetic fields of sufficient amplitudes to cause such excitation. It is therefore possible to manipulate the nervous system of a subject by pulsing images displayed on a nearby computer monitor or TV set. For the latter, the image pulsing may be imbedded in the program material, or it may be overlaid by modulating a video stream, either as an RF signal or as a video signal. The image displayed on a computer monitor may be pulsed effectively by a simple computer program. For certain monitors, pulsed electromagnetic fields capable of exciting sensory resonances in nearby subjects may be

generated even as the displayed images are pulsed with subliminal intensity.

**Type:** Application

**Filed:** June 1, 2001

**Publication date:** December 12, 2002

**Inventor:** Hendricus G. Loos

**Remote magnetic manipulation of nervous systems**

**Patent number:** 6238333

**Abstract:** Apparatus and method for remote manipulation of nervous systems by the magnetic dipole field of a rotating bar magnet. Reliance on modulation of spontaneous spiking patterns of sensory nerve receptors, and exploitation of a resonance mechanism of certain neural circuits, allows the use of very weak magnetic fields. This, together with the large magnetic moments that can be obtained with a permanent bar magnet, makes it possible to effectively manipulate the nervous system of a subject over a distance of several hundred meters, using a small portable battery-powered device. The method can be used in law enforcement for standoff situations.

**Type:** Grant

**Filed:** August 10, 1999

**Date of Patent:** May 29, 2001

**Inventor:** Hendricus G. Loos

**Pulse variability in electric field manipulation of nervous systems**

**Patent number:** 6167304

**Abstract:** Apparatus and method for manipulating the nervous system of a subject by applying to the skin a pulsing external electric field which, although too weak to cause classical nerve stimulation, modulates the normal spontaneous spiking patterns of certain kinds of afferent nerves. For certain pulse frequencies the electric field stimulation can excite in the nervous system resonances with observable physiological consequences. Pulse variability is introduced for the purpose of thwarting habituation of the nervous system to the repetitive stimulation, or to alleviate the need for precise tuning to a resonance frequency, or to control pathological oscillatory neural activities such as tremors or seizures. Pulse generators with stochastic and deterministic pulse variability are disclosed, and the output of an effective generator of the latter type is characterized.

**Type:** Grant

**Filed:** June 17, 1999

**Date of Patent:** December 26, 2000

**Inventor:** Hendricus G. Loos

**Pulsative manipulation of nervous systems**

**Patent number:** 6091994

**Abstract:** Method and apparatus for manipulating the nervous system by imparting subliminal pulsative cooling to the subject's skin at a frequency that is suitable for the excitation of a sensory resonance. At present, two major sensory resonances are known, with frequencies near 1/2 Hz and 2.4 Hz. The 1/2 Hz sensory resonance causes relaxation, sleepiness, ptosis of the eyelids, a tonic smile, a "knot" in the stomach, or sexual excitement, depending on the precise frequency used. The 2.4 Hz resonance causes the slowing of certain cortical activities, and is characterized by a large increase of the time needed to silently count backward from 100 to 60, with the eyes closed. The invention can be used by the general public for inducing relaxation, sleep, or sexual excitement, and clinically for the control and perhaps a treatment of tremors, seizures, and autonomic system disorders such as panic attacks.

**Type:** Grant

**Filed:** August 31, 1998

**Date of Patent:** July 18, 2000

**Inventor:** Hendricus G. Loos

**Electric fringe field generator for manipulating nervous systems**

**Patent number:** 6081744

**Abstract:** Apparatus and method for manipulating the nervous system of a subject through afferent nerves, modulated by externally applied weak fluctuating electric fields, tuned to certain frequencies such as to excite a resonance in neural circuits. Depending on the frequency chosen, excitation of such resonances causes in a human subject relaxation, sleepiness, sexual excitement, or the slowing of certain cortical processes. The electric field used for stimulation of the subject is induced by a pair of field electrodes charged to opposite polarity and placed such that the subject is entirely outside the space between the field electrodes. Such configuration allows for very compact devices where the field electrodes and a battery-powered voltage generator are contained in a small casing, such as a powder box. The stimulation by the weak external electric field relies on frequency modulation of spontaneous spiking patterns of afferent nerves.

**Type:** Grant

**Filed:** July 17, 1998

**Date of Patent:** June 27, 2000

**Inventor:** Hendricus G. Loos

**Subliminal acoustic manipulation of nervous systems**

**Patent number:** 6017302

**Abstract:** In human subjects, sensory resonances can be excited by subliminal atmospheric acoustic pulses that are tuned to the resonance frequency. The 1/2 Hz sensory resonance affects the autonomic nervous system and may cause relaxation, drowsiness, or sexual excitement, depending on the precise acoustic frequency near 1/2 Hz used. The effects of the 2.5 Hz

resonance include slowing of certain cortical processes, sleepiness, and disorientation. For these effects to occur, the acoustic intensity must lie in a certain deeply subliminal range. Suitable apparatus consists of a portable battery-powered source of weak subaudio acoustic radiation. The method and apparatus can be used by the general public as an aid to relaxation, sleep, or sexual arousal, and clinically for the control and perhaps treatment of insomnia, tremors, epileptic seizures, and anxiety disorders.

**Type:** Grant

**Filed:** October 31, 1997

**Date of Patent:** January 25, 2000

**Inventor:** Hendricus G. Loos

**Method and apparatus for associative memory**

**Patent number:** 5995954

**Abstract:** A method and apparatus for an electronic artificial neural network, which serves as an associative memory that has a complete set of N-dimensional Hadamard vectors as stored states, suitable for large N that are powers of 2. The neural net has nonlinear synapses, each of which processes signals from two neurons. These synapses can be implemented by simple passive circuits comprised of eight resistors and four diodes. The connections in the neural net are specified through a subset of a group that is defined over the integers from 1 to N. The subset is chosen such that the connections can be implemented in VLSI or wafer scale integration. An extension of the Hadamard memory causes the memory to provide new Hadamard vectors when these are needed for the purpose of Hebb learning.

**Type:** Grant

**Filed:** March 18, 1992

**Date of Patent:** November 30, 1999

**Inventor:** Hendricus G. Loos

**Magnetic excitation of sensory resonances**

**Patent number:** 5935054

**Abstract:** The invention pertains to influencing the nervous system of a subject by a weak externally applied magnetic field with a frequency near 1/2 Hz. In a range of amplitudes, such fields can excite the 1/2 sensory resonance, which is the physiological effect involved in "rocking the baby". The wave form of the stimulating magnetic field is restricted by conditions on the spectral power density, imposed in order to avoid irritating the brain and the risk of kindling. The method and apparatus can be used by the general public as an aid to relaxation, sleep, or arousal, and clinically for the control of tremors, seizures, and emotional disorders.

**Type:** Grant

**Filed:** June 7, 1995

**Date of Patent:** August 10, 1999

**Inventor:** Hendricus G. Loos

**Manipulation of nervous systems by electric fields**

**Patent number:** 5899922

**Abstract:** Apparatus and method for manipulating the nervous system of a subject through afferent nerves, modulated by an externally applied weak electric field. The field frequency is to be chosen such that the modulation causes excitation of a sensory resonance. The resonances found so far include one near 1/2 Hz which affects the autonomic nervous system, and a resonance near 2.4 Hz that causes slowing of certain cortical processes. Excitation of the 1/2 Hz autonomic resonance causes relaxation, sleepiness, ptosis of the eyelids, or sexual excitement, depending on the precise frequency used. The weak electric field for causing the excitation is applied to skin areas away from the head of the subject, such as to avoid substantial polarization current densities in the brain. Very weak fields suffice for bringing about the physiological effects mentioned. This makes it possible to excite sensory resonances with compact battery powered devices that have a very low current consumption.

**Type:** Grant

**Filed:** November 14, 1997

**Date of Patent:** May 4, 1999

**Inventor:** Hendricus G. Loos

**Thermal excitation of sensory resonances**

**Patent number:** 5800481

**Abstract:** In man, autonomic and cortical resonances of the nervous system can be excited by inducing subliminal heat pulses in the skin by means of a resistive heat patch, laser, heat lamp, or microwave radiation, or through a slow air jet that carries a small periodic fluctuation in temperature. Deeply subliminal skin temperature oscillations of frequency near 1/2 Hz induced in a subject by any of these means cause sleepiness, drowsiness, relaxation, a tonic smile, ptosis of the eyelids, a tense feeling, sudden loose stool, or sexual excitement, depending on the precise pulse frequency used. For certain higher frequencies, the induced subliminal skin temperature oscillations cause fractured thought and a slowing of certain cortical processes. The method and apparatus can be used by the general public as an aid to relaxation, sleep, or arousal, and clinically for the control and perhaps treatment of tremors, seizures, and emotional disorders.

**Type:** Grant

**Filed:** December 28, 1995

**Date of Patent:** September 1, 1998

**Inventor:** Hendricus G. Loos

**Method and apparatus for manipulating nervous systems**

**Patent number:** 5782874

**Abstract:** Apparatus and method for manipulating the nervous system of a subject through afferent nerves, modulated by externally applied weak fluctuating electric fields, tuned to certain frequencies such as to excite a resonance in certain neural circuits. Depending on the frequency chosen, excitation of such resonances causes relaxation, sleepiness, sexual excitement, or the slowing of certain cortical processes. The weak electric field for causing the excitation is applied to skin areas away from the head of the subject, such as to avoid substantial polarization current densities in the brain. By exploiting the resonance phenomenon, these physiological effects can be brought about by very weak electric fields produced by compact battery-operated devices with very low current assumption. The fringe field of doublet electrodes that form a parallel-plate condenser can serve as the required external electric field to be administered to the subject's skin.

**Type:** Grant

**Filed:** January 24, 1997

**Date of Patent:** July 21, 1998

**Inventor:** Hendricus G. Loos

#### **Bipolar fog abatement system**

**Patent number:** 4475927

**Abstract:** A method and system for the abatement of fog in a designated air space over an aircraft approach zone and runway, consisting of gapped air jets laden with electrically charged droplets of low mobility, a ground corona guard in the form of a shallow water-and-oil basin, and a charged-collector-drops emitting device on the ground, arranged in such a manner that the low-mobility charged droplets blown aloft by the air jets form a virtual electrode suspended at appropriate height above the ground, toward which the oppositely charged high-mobility collector drops move, thereby collecting the neutral fog drops in their paths. The perforation ratio of the gapped air jet array is chosen such that the wind flux which penetrates the jet array is substantially equal to the entrainment flux at the lee side of the jets, thereby providing for a virtual canopy over the spatial region in which the fog is to be abated.

**Type:** Grant

**Filed:** March 3, 1981

**Date of Patent:** October 9, 1984

**Inventor:** Hendricus G. Loos

#### **Multiple wavelength instrument for measurement of particle size distributions**

**Patent number:** 4361403

**Abstract:** A method for measurement of the size distribution of particles suspended in a gas or in a liquid. The particle suspension is illuminated by a collimated beam of colored light, which is produced by passing a collimated beam of substantially white light through a spectral filter which has spatial sections of narrow spectral passband in the blue, green and red. Part of the

light scattered by the particles is collected by a lens and is passed through a spatial filter placed in the focal plane of the lens. The light transmitted by the filter is measured by a photodetector. The photodetector output is measured as different spatial filters are switched in place. A computer, microprocessor, or analog device acts on the measured values and produces the particle size distribution as an output. The data reduction algorithm consists of a linear transformation of the measured data vector, followed by the construction of a linear combination of basis functions for the size distribution.

**Type:** Grant

**Filed:** January 21, 1980

**Date of Patent:** November 30, 1982

**Inventor:** Hendricus G. Loos

**Dispersive instrument for measurement of particle size distributions**

**Patent number:** 4338030

**Abstract:** A method for measurement of the size distribution of particles suspended in a gas or in a liquid. The particle suspension is illuminated by a collimated beam of substantially white light. Part of the light scattered by the particles is collected by a lens and is passed through a slit placed in the focal plane of the lens. The light transmitted by the slit is made to pass through a dispersive element which causes spectral decomposition of the processed light in a direction perpendicular to the slit. A spatial filter is placed in the exit plane of the dispersive element; the transmittance of this filter is a function of position on the filter. The light transmitted by the filter is measured by a photodetector. The photodetector output is measured as different spatial filters are switched in place. A computer, microprocessor, or analog device acts on the measured values and produces the particle size distribution as an output.

**Type:** Grant

**Filed:** March 18, 1980

**Date of Patent:** July 6, 1982

**Inventor:** Hendricus G. Loos

**Optical instrument for measurement of particle size distributions**

**Patent number:** 4245909

**Abstract:** A method for measurement of the size distribution of particles suspended in a gas or in a liquid. The particle suspension is illuminated by a collimated beam of nearly monochromatic light. Part of the light scattered by the particles is collected by a lens and is passed through a spatial filter placed in the focal plane of the lens. The light transmitted by the filter is measured by a photodetector. The photodetector output is measured as different spatial filters are switched in place. A computer, microprocessor, or analog device acts on the measured values and produces the particle size distribution as an output. The data reduction algorithm consists of a linear transformation of the measured data vector, followed by the construction of a

linear combination of basis functions for the size distribution. The spatial filters consist of transparencies with non-uniform transmittance functions.

**Type:** Grant

**Filed:** June 26, 1978

**Date of Patent:** January 20, 1981

**Inventor:** Hendricus G. Loos