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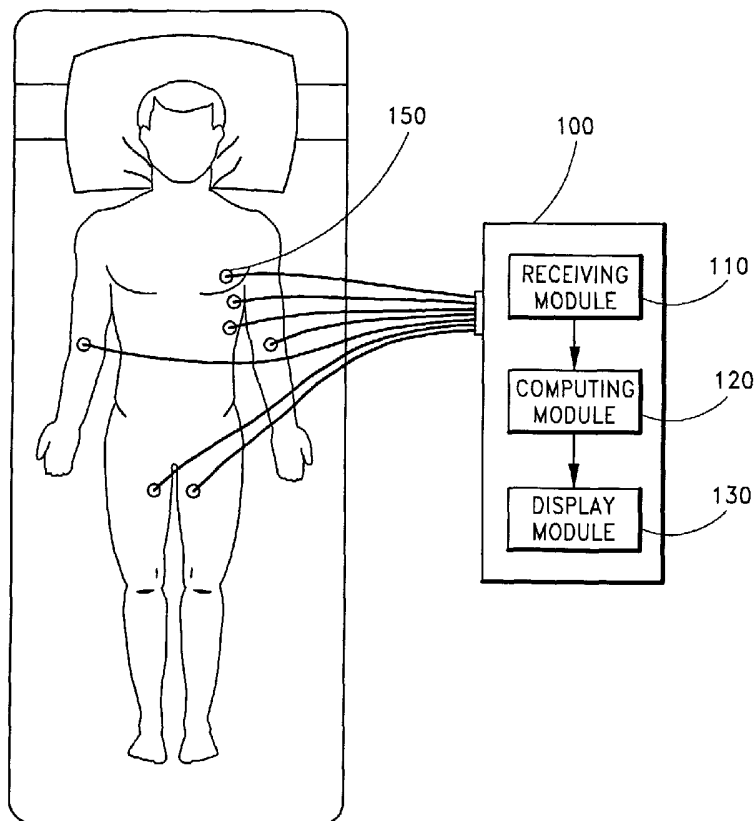
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[Continued on next page]

(54) Title: SYSTEM AND METHOD FOR SEPARATING CARDIAC SIGNALS



(57) Abstract: EKG sensors (150) are placed on a patient (140) to receive electrocardiogram (EKG) recording signals, which are typically combinations of original signals from different sources, such as pacemaker signals, QRS complex signals, and irregular oscillatory signals that suggest an arrhythmia condition. A computing module (120) uses independent component analysis to separate the recorded EKG signals. The separated signals are displayed to help physicians to analyze heart conditions and to identify probably locations of abnormal heart conditions. At least a portion of the separated signals can be further displayed in a chaos phase space portrait to help detect abnormality in heart conditions.



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European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,  
ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK,  
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# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/21277

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(7) : A61B 5/0452

US CL : 600/515

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 600/515, 508, 509, 518, 523

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5967995 A (SHUSTERMAN ET AL) 19 OCTOBER 1999, SEE ENTIRE DOCUMENT	1, 4, 6, 7, 10, 11, 13, 15, 16, 19, 20
X	US 5423863 A (FELBINGER ET AL) 13 JUNE 1995, SEE ENTIRE DOCUMENT	17, 18

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents:		
"A"	document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E"	earlier application or patent published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O"	document referring to an oral disclosure, use, exhibition or other means	
"P"	document published prior to the international filing date but later than the priority date claimed	"&" document member of the same patent family

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