616. 标题: The remote sensing of mental stress from the electromagnetic reflection coefficient of human skin in the sub-THz range
作者: Safrai, E (Safrai, Eli); Ben Ishai, P (Ben Ishai, Paul); Caduff, A (Caduff, Andreas); Puzenko, A (Puzenko, Alexander); Polsman, A (Polsman, Alexander); Agranat, AJ (Agranat, Aharon J.); Feldman, Y (Feldman, Yuri)
来源出版物: BIOELECTROMAGNETICS 卷: 33 期: 5 页: 375-382 DOI: 10.1002/bem.21698 出版年: JUL 2012
在 Web of Science 中的被引频次: 0
被引频次合计: 0
引用的参考文献数: 38
摘要: Recent work has demonstrated that the reflection coefficient of human skin in the frequency range from 95 to 110?GHz (W band) mirrors the temporal relaxation of stress induced by physical exercise. In this work, we extend these findings to show that in the event of a subtle trigger to stress, such as mental activity, a similar picture of response emerges. Furthermore, the findings are extended to cover not only the W band (75-110?GHz), but also the frequency band from 110 to 170?GHz (D band). We demonstrate that mental stress, induced by the Stroop effect and recorded by the galvanic skin response (GSR), can be correlated to the reflection coefficient in the aforementioned frequency bands. Intriguingly, a light physical stress caused by repeated hand gripping clearly showed an elevated stress level in the GSR signal, but was largely unnoted in the reflection coefficient in the D band. The implication of this observation requires further validation. Bioelectromagnetics 33:375382, 2012. (C) 2011 Wiley Periodicals, Inc.
入藏号: WOS:000304750800003
语种: English
文献类型: Article
作者关键词: human skin; sweat ducts; epidermis; reflection coefficient; Stroop effect; mental stress; antennas
KeyWords Plus: OPTICAL COHERENCE TOMOGRAPHY; MILLIMETER WAVES; REFRACTIVE-INDEX; INTERFERENCE; SCATTERING; RESPONSES; EXERCISE; STATE
地址: [Safrai, Eli; Ben Ishai, Paul; Caduff, Andreas; Puzenko, Alexander; Polsman, Alexander; Agranat, Aharon J.; Feldman, Yuri] Hebrew Univ Jerusalem, Dept Appl Phys, IL-91904 Jerusalem, Israel
[Caduff, Andreas] Biovotion AG, Zurich, Switzerland
通讯作者地址: Feldman, Y (通讯作者),Hebrew Univ Jerusalem, Dept Appl Phys, Bergman Bldg,Edmond J Safra Campus, IL-91904 Jerusalem, Israel
电子邮件地址: yurif@vms.huji.ac.il
出版商: WILEY-BLACKWELL
出版商地址: 111 RIVER ST, HOBOKEN 07030-5774, NJ USA
Web of Science 分类: Biology; Biophysics
学科类别: Life Sciences & Biomedicine - Other Topics; Biophysics
IDS 号: 951WM
ISSN: 0197-8462
29 字符的来源出版物名称缩写: BIOELECTROMAGNETICS
ISO 来源出版物缩写: Bioelectromagnetics
来源出版物页码计数: 8