LSBB
Laboratoire Souterrain à Bas Bruit
Low Noise Inter-Disciplinary Underground Science & Technology

ELECTRICAL & COMPUTER ENGINEERING IN MEDICINE ECEM

UNIVERSITY OF BRITISH COLUMBIA

IDENTITY

ASSOCIATED RESEARCH UNITS

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RESEARCH THEMES

Performing innovative research at the interface between technology and patient care

Develop the intelligent anesthesia navigator

KEY WORDS

Electroencephalographic /Brain/ EEG/ NeuroSense/ Somatosensory cortex/ Low-noise environment

PRESENTATION

The University of British Columbia is a global centre for research and teaching, consistently ranked among the 40 best universities in the world. Since 1915, UBC's West Coast spirit has embraced innovation and challenged the status quo. Its entrepreneurial perspective encourages students, staff and faculty to challenge convention, lead discovery and explore new ways of learning. At UBC, bold thinking is given a place to develop into ideas that can change the world.

The Electrical & Computer Engineering in Medicine research group is a unique collaboration of engineers, computer scientists, psychologists and clinicians focused on performing innovative research at the interface between technology and patient care. Our vision is to enhance patient-centered care using innovation in technologies and treatments. One of our key objectives is to develop the intelligent anesthesia navigator (IAN), which aims to address the needs of modern anesthesiologists.

LSBB PROJECT

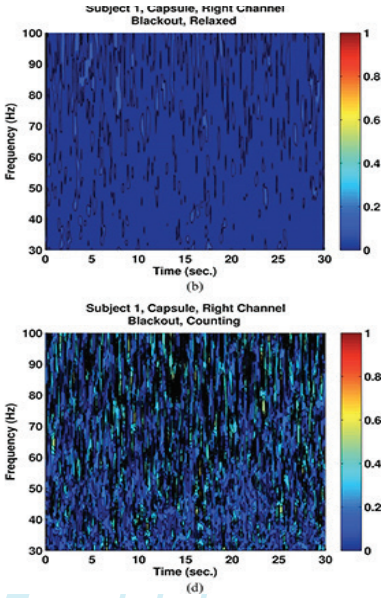
This pilot study investigates effects of an ultrashielded capsule at the low-noise underground laboratory (LSBB), Rustrel, France, when used to acquire scalp electroencephalogram (EEG). Analysis of EEG recordings from three volunteers confirms that clean EEG signals can be acquired in the LSBB capsule without the need for notch filtering. In addition, using different setups for acquiring EEG in the capsule, statistical analysis of power spectral densities based on a geodesic distance measure reveals that a laptop and a patient module do not introduce any noise on recorded signals. Moreover, the current study shows that the backward counting task as a mental activity can be better detected using the EEG acquired in the capsule due to the higher level of β-band activities. The counting-relaxed β -band energy ratio is calculated using the S transform and compared between the hospital and capsule, revealing significantly higher values in the capsule ($p < 0.05$). Exploring the relative β-band energy (ratio of β-band energy to that of 0-12 Hz in the counting state) reveals that the average of this measure is higher in the capsule for all subjects. Those results demonstrate the potential of the LSBB capsule for novel EEG studies, including the establishment of novel low-noise EEG benchmarks.

SKILLS AND KNOW-HOW

ECEM is a unique collaboration of engineers, computer scientists, psychologists and clinicians at the University of British Columbia in Vancouver, Canada. We are focused on performing innovative research at the interface between technology and patient care. Since our inception in 2001 our vision has been to enhance patient-centered care using innovation in technologies and treatments. One of our key objectives is to develop the intelligent anesthesia navigator (IAN), which aims to address the needs of modern anesthesiologists.

WEBSITE LSBB LINK

http://www.lsbb.eu/index.php/fr/ct-menu-item-19/ct-menu-item-120



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THÈMES DE RECHERCHE

MOTS CLÉS

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PRÉSENTATION

PROJET LSBB

COMPÉTENCES ET SAVOIR-FAIRE

LIEN SUR LE SITE DU LSBB

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PARTENARIATS ACADÉMIQUES