

AN EXPERIMENTAL SETUP FOR A BRAIN-COMPUTER INTERFACE

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The origin of cerebral potentials is based upon the intrinsic electrophysiological properties of the nervous system. Identifying the generator source and electrical field of propagation are the basis for recognizing electrographic patterns that underlie the expression of the “brain waves”. Most routine EEGs recorded at the surface of the scalp represent pooled electrical activity generated by large numbers of neurons. Electrical signals are created when electrical charges move within the central nervous system [1].

Neural function is normally maintained by *ionic gradients* established by neuronal membranes. Sufficient duration and length of small amounts (in micro-volts) of electrical currents of cerebral activity are required to be amplified and displayed for interpretation [1].

In the near past, EEG signals had been widely used in medicine for diagnostic purposes only. With the development of new computer technology and data acquisition and analysis methods, EEG signals are used more and more in the control of electronic and mechatronic devices. This field of applications is known as “brain-computer interfaces”.

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