

Poster Presentation P45

**A MULTI-CHANNEL, MULTI-MODE BIOPOTENTIAL MEASUREMENT DEVICE**

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We present research related to the design and construction of a biopotential measurement device that can be utilized for Electroencephalograph (EEG), electrocardiograph (ECG), electromyograph (EMG), and electrooculograph (EOG) measurements. Novel aspects of this device include JFET-based active electrodes, the stringent use of shielding and balancing methods, as well as other low-noise techniques and components. The circuit includes a pre-amplifying stage, an active low pass filter, an active high pass filter, and a final amplifying stage. An integrator is included for the EMG measurement. A switch enables the user to pick between modes of measurement. Our goal for the immediate future is to combine multi-channel signals to control a game named Osmos, which requires directional signal and speed signal inputs.