used to try to choke off some of the coupling paths for RFI. The small form factor also juxtaposes the electrodes and the RFI sources with very little physical separation.

One approach sometimes employed to attempt to reduce RFI is to "can" the source of the RFI. In a device 201 this might be done by putting a metal shroud of a suitably selected metal or alloy around the circuitry 207. While this approach may indeed reduce RFI, it has the drawback of introducing still greater parasitic capacitances as between electrodes 203, 204.

It would be very desirable if a way could be found to detect such faint electrical signals reliably, in ways that would be more consistently acceptable to the subject than prior-art approaches. If a way could be found, it might be less irritating to the epidermis, might interfere less or not at all with freedom of movement, and might be more aesthetically pleasing to some eyes.

Summary

According to an aspect, there is provided an apparatus for gathering data, the apparatus comprising: a first electrode, the electrode characterized as non-sticky, the electrode disposed for capacitive or electrically conductive coupling with a surface; a second electrode, the electrode characterized as non-sticky, the electrode disposed for capacitive or electrically conductive coupling with a region opposed to the surface; electronic circuitry disposed between the first and second electrodes; the first electrode shielded by a shield located between the first electrode and the electronic circuitry; the second electrode shielded by a shield located between the second electrode and the electronic circuitry; the electronic circuitry comprising a first driver receiving as an input a signal present at the first electrode, the first driver having an output coupled with the shield of the first electrode; the electronic circuitry comprising a second driver receiving as an input a signal present at the second electrode, the second driver having an output coupled with the shield of the second electrode; the electronic circuitry further comprising a differential amplifier having first and second inputs, each input connected to a respective one of the first and second electrodes; the differential amplifier having an output; the electronic circuitry further comprising means for communicating data indicative of the output of the differential amplifier to equipment external to the apparatus, wherein the means for communicating data indicative of the output of the differential amplifier to equipment external to the apparatus comprises a Bluetooth link.

According to another aspect, there is provided a method for use in detecting signals, the method comprising the steps of: providing a first electrode, the electrode characterized as non-sticky, the electrode capacitively or electrically conductively with a surface; providing a second electrode, the electrode characterized as non-sticky, the electrode capacitively coupled with a region opposed to the surface; providing a first shield between the first electrode and the electronic circuitry; providing a second shield between the second electrode and the electronic circuitry; driving the first shield to follow a signal present at the first electrode; driving the second shield to follow a signal present at the second electrode; deriving a difference between the signal present at the first electrode and the signal present at the second electrode; and communicating data indicative of the difference to equipment external to the apparatus.

In an embodiment, a~~A~~ device for gathering data has first and second electrodes. The first electrode is coupled to a surface of interest, and the second electrode is coupled to "everything else" or "the air". The first electrode is shielded from the second, and from most sources of parasitic capacitance, by a shield that is driven by an active driver that drives the shield to track, and ideally to match, the instantaneous potential of the electrode. The second electrode is likewise shielded in a similar way from most sources of parasitic capacitance. These shields likewise help to limit the extent to which RFI from the device electronics couples with either of the electrodes. In this way the sensing device achieves a markedly better signal-to-noise ratio at frequency bands of interest.

Description of the drawing

Figure 1 shows a sensing device according to the invention in cross-sectional view;

Figure 2 shows a possible sensing device according to the prior art in cross-sectional view; and

Figure 3 shows the sensing device of Fig. 1 in functional block diagram portrayal.

Also attached is a schematic diagram of an exemplary aspect of the circuitry 107 of the invention.