Epilepsy

A chronic neurological disorder that affects people of all ages. Seizure are physical reactions to sudden, excessive electrical discharges in a group of brain cells.

EEG Recordings Reflect the averaged activity of millions of neurons. This is a non-invasive method.

High-Resolution Epileptic Brain Recording

In clinical practice, commercially available arrays are used. Researchers in medicine and engineering try to scale down the dimensions to micrometer size.

High spatial resolution but limited coverage on the cortex.

Design Goals Overview

- Low-Noise tunable BW neural amplifiers
- Capable of recording/filtering low frequency signals (LFPs)
- Capable of recording/filtering high frequency spikes
- High spatial resolution signal recording
- Multi electrodes in different areas/pitches
- Low-power (maximum 6.4 µW per amplifier) and low-area implementation
- Multiplexing/Data compression for multi channel/chip realization
- Electrodes: 80x80 and 60x60 µm² area, 250 and 150 µm pitch
- With highly flexible substrates, design a wireless flexible high-resolution system, suitable for implantable applications