A crucial requirement for implantable neural interfaces is their power consumption. It has to be kept as low as possible to prevent any risk of tissue damaging due to local heating. This demand applies to all circuit components.

The aim of this work is the addition of an analog-to-digital converter (ADC) to a multichannel neural recording system [1]. For this purpose, an already existing design of an incremental discrete-time $\Delta\Sigma$ ADC has to be utilized [2]. Such an architecture allows to achieve high resolution while maintaining the one-to-one mapping between the input and output samples, required for the usage in a multiplexed system. Due to its field of application, the emphasize lies on low-power consumption.

![Diagram of an incremental discrete-time $\Delta\Sigma$ ADC in a multichannel environment](Figure1)

After an induction phase and literature research the functional verification of the ADC has to be performed and possible arising problems have to be solved. The final steps include the layout of the circuit and simulating the impact of the accompanying parasitics.

**What we expect:** Basic knowledge of analog circuit design, organized and well documented research and dedication to successful work.
