

# Neuroprothetics Exercise 7

## Filter Banks

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### 1 Tonotopy of a simplified cochlear implant model

#### 1.1 Electrode center frequencies

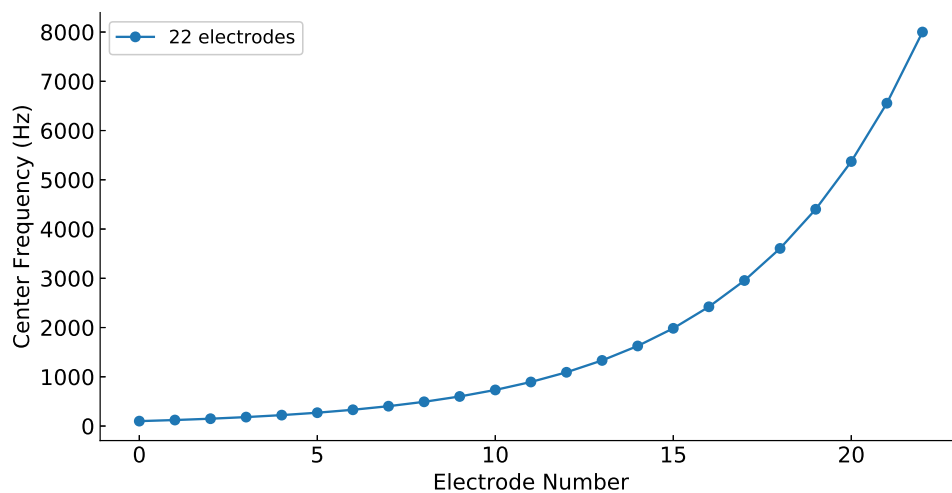


Figure 1: Center frequencies for CIs with different numbers of electrodes.

## 1.2 Implement a filter bank

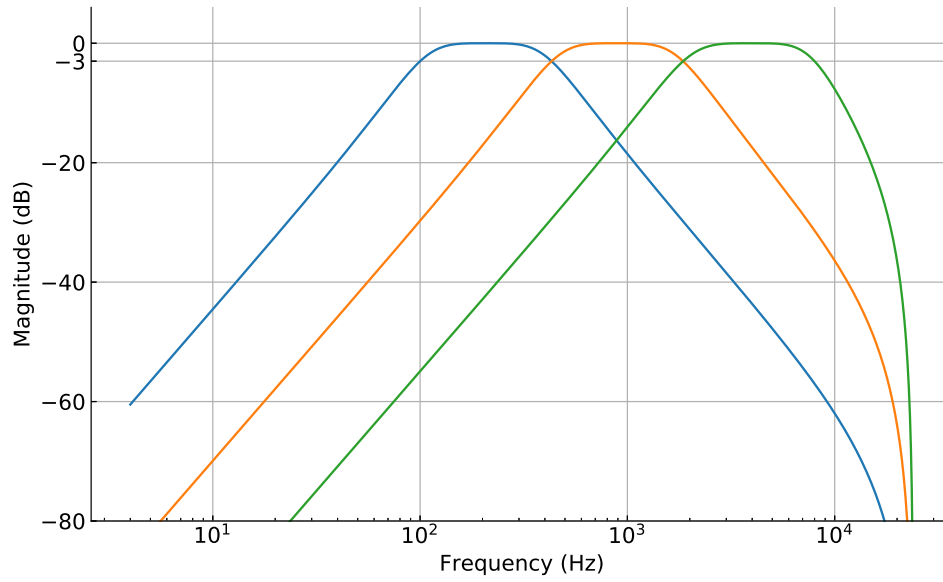


Figure 2: Frequency response of a second-order band-pass filter bank for a CI with three electrodes.

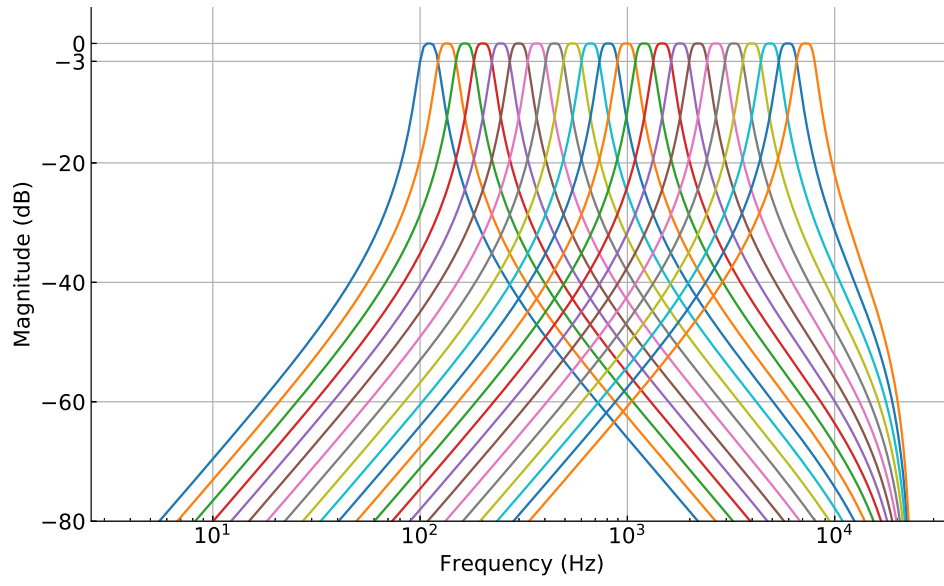


Figure 3: Frequency response of a second-order band-pass filter bank for a CI with 22 electrodes.

### 1.3 Filter a recorded signal

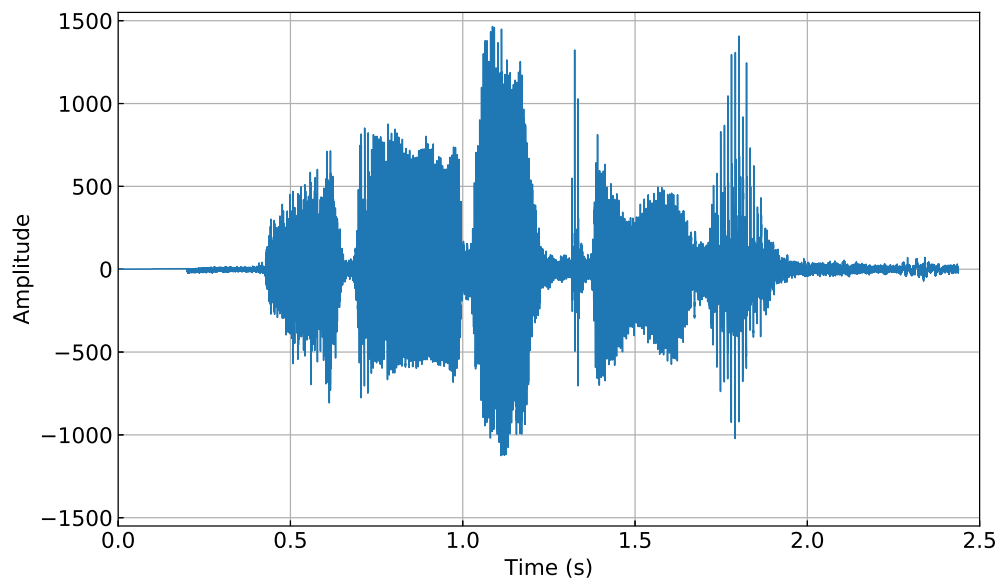


Figure 4: Sorekara.

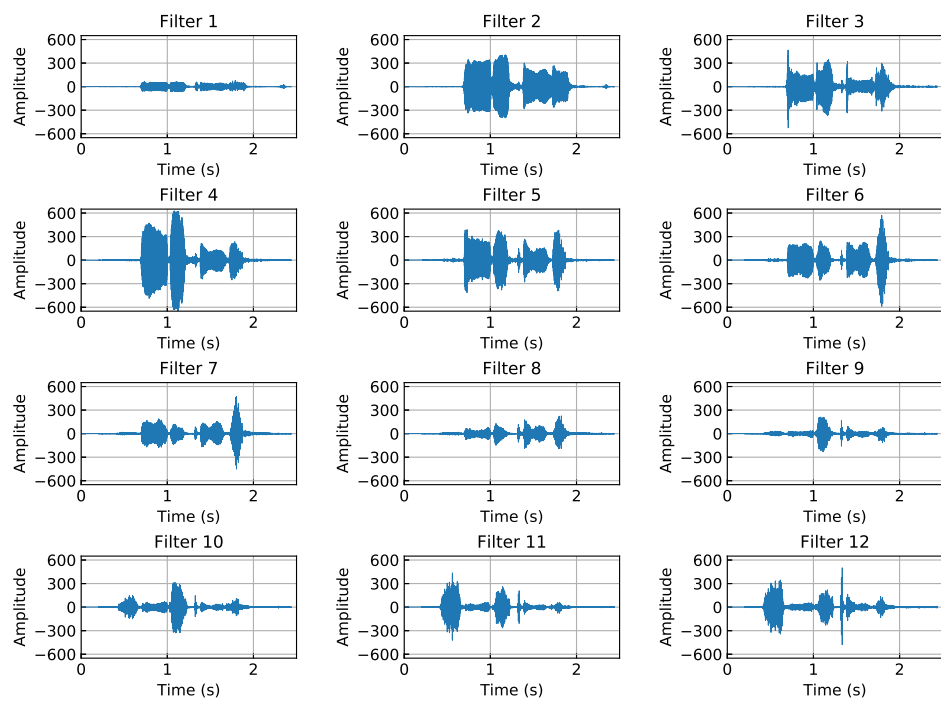


Figure 5: Wav.

## 1.4 Join the channels