

# **Audio- / Videosignalverarbeitung**

## **Advanced Digital Signal Processing**

### **Digital Signal Processing 2**

**Seminar 4**  
**WS 2017/2018**

# Homework assignment (1/2)

1. Upsample the speech signal by the factor of  $N = 4$ , using **polyphase decomposition (Noble Identities)**
  - Use the same .wav file as in the Homework 3
  - Compare with Homework 3
2. Design filter for the anti-alias-filtering (as in HW 3)
  - FIR with 32 filter coefficients
  - Use: Parks-McClellan-Algorithm (remez filter design function)
  - Plot impulse and frequency response

# Homework assignment (2/2)

- Reasonable filter design, i.e. consider:
  - passband, stopband, transition band
  - stopband attenuation
  - weights
  - normalization of frequency
  - stopband should start where aliasing components appear
- 3. Listen to and compare signals before and after upsampling and filtering (**is there an improvement when comparing to Homework 3?**)