Motivations
MSS empirical upper bound

- Phase information is critical.

  - So we estimate:

    - **Phase variation**

- Mask magnitude better not limited in value.

  - So we estimate:

    - **Bounded mask + magnitude residual**

Table 1. The empirical upper bounds of MSS systems on MUSDB18. 'acc.' indicates accompaniment. On the top row, numbers indicate the limit of the magnitude masks.

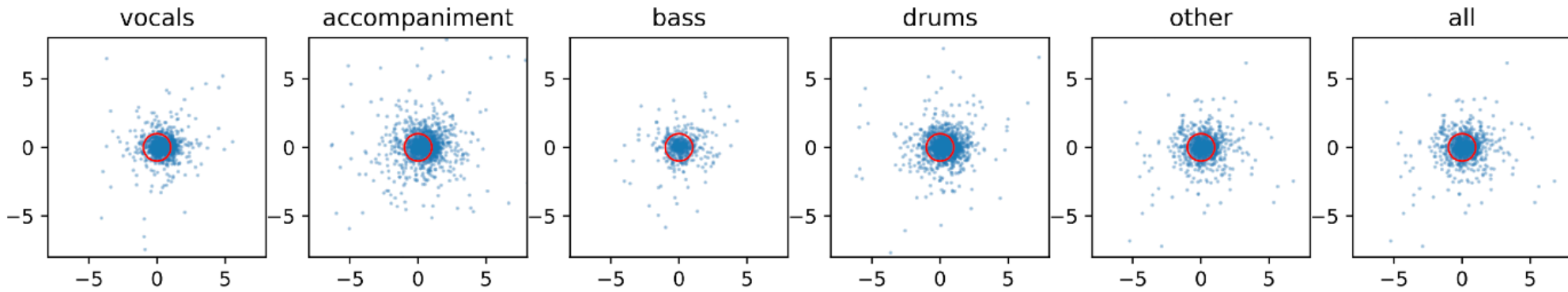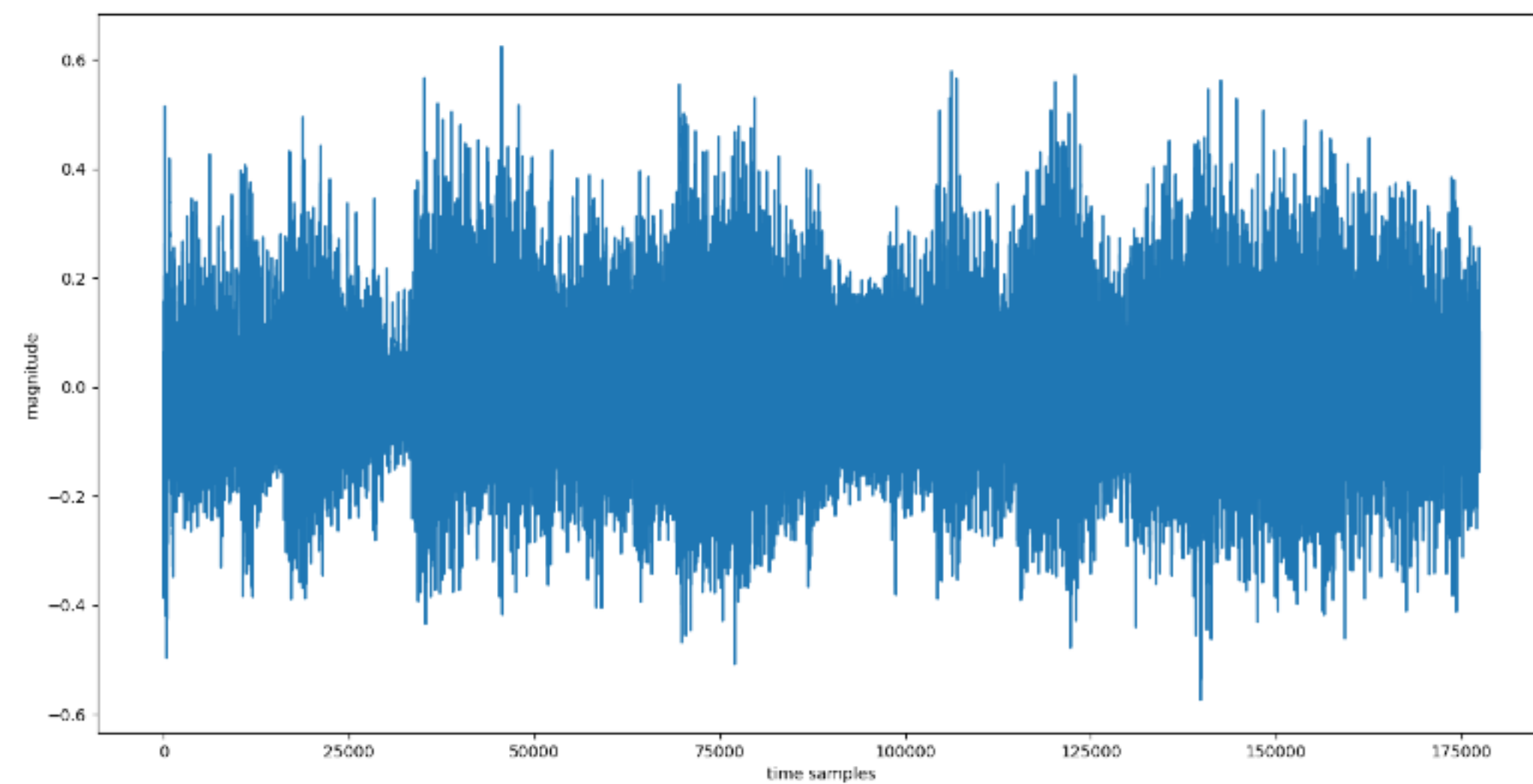|	Mixture	IBM	IRM (1)	IRM (inf)	cIRM (1)	cIRM (2)	cIRM (5)	cIRM (10)	cIRM (inf)
vocals	-5.69	10.59	10.04	10.42	19.84	31.02	41.04	47.62	54.50
acc.	-5.68	16.10	15.31	15.97	26.54	37.62	47.33	53.51	60.63
bass	-6.36	7.17	6.05	6.07	17.99	27.88	37.86	44.30	54.12
drums	-4.30	8.75	8.03	8.61	19.10	30.38	39.91	46.45	56.08
other	-4.92	8.20	7.28	7.37	18.97	28.91	39.08	45.64	56.00

Figure 2. cIRMs of vocals, accompaniment, bass, drums, other, and all sources, on the complex 2D plain. Unit circles are drawn in red.
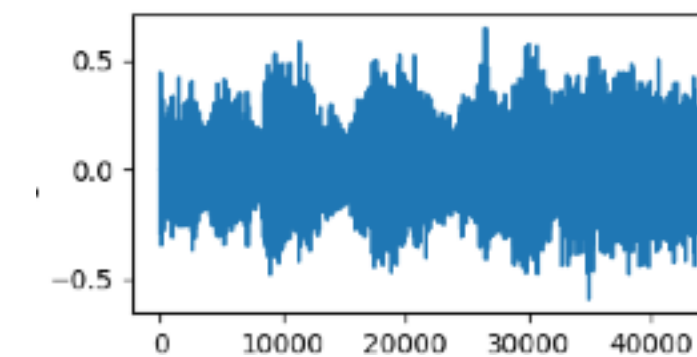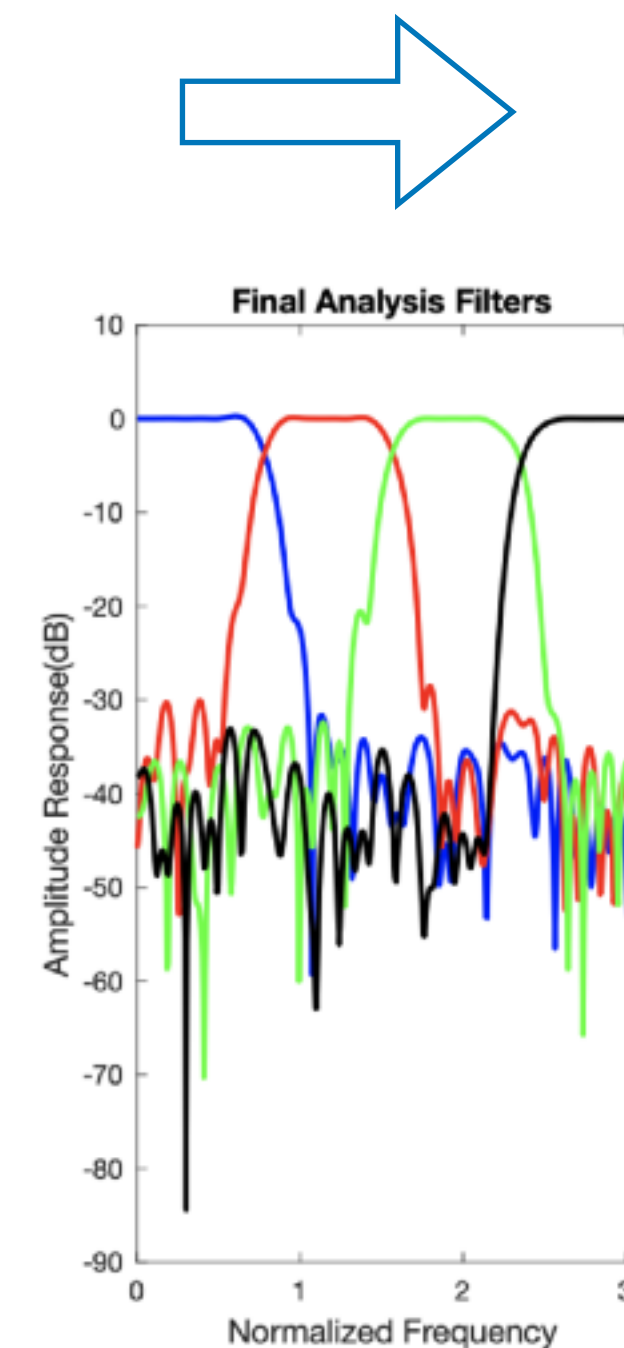
Motivations
Channel-wise subband feature
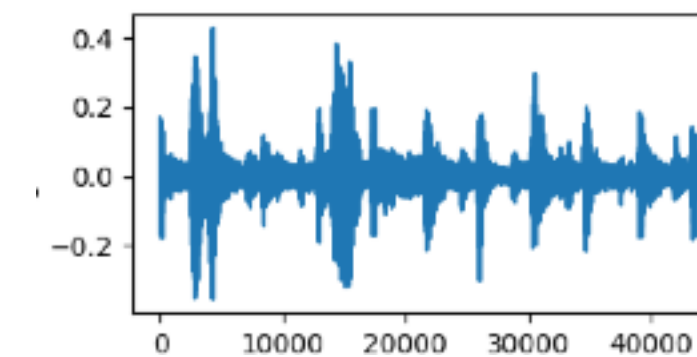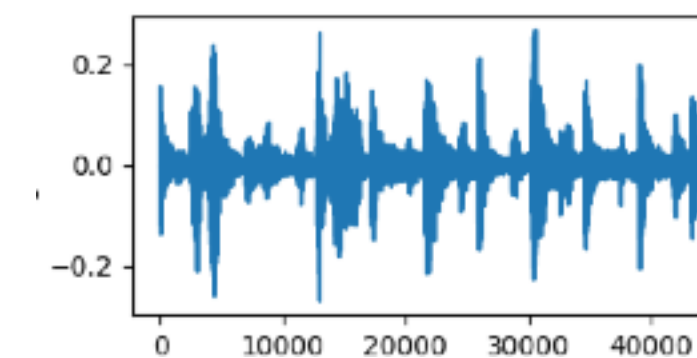
- What's subband decomposition?

Convolution with four filters
&
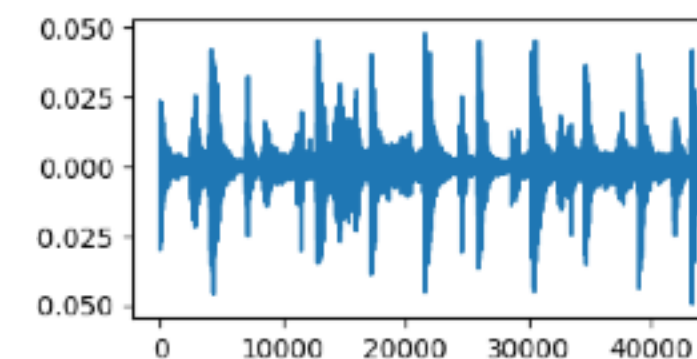Down sampling × 4

Sample rate: 44100

Final Analysis Filters

Subband 1

Subband 2

Subband 3

Subband 4

Sample rate: 11025

https://github.com/haoheliu/torchsubband