

Towards Extraction of Ground Truth Data from DJ Mixes

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ABC_DJ Artist to Business to
Business to Consumer
Audio Branding System



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Context: Understanding DJ Culture & Practices

Important part of popular music culture

Outcomes:

- musicological research in popular music
- studies on DJ culture
- computer support of DJing
- automisation of DJ mixing

Problem: *Lack of Annotated Databases of DJ Mixes or DJ Sets*

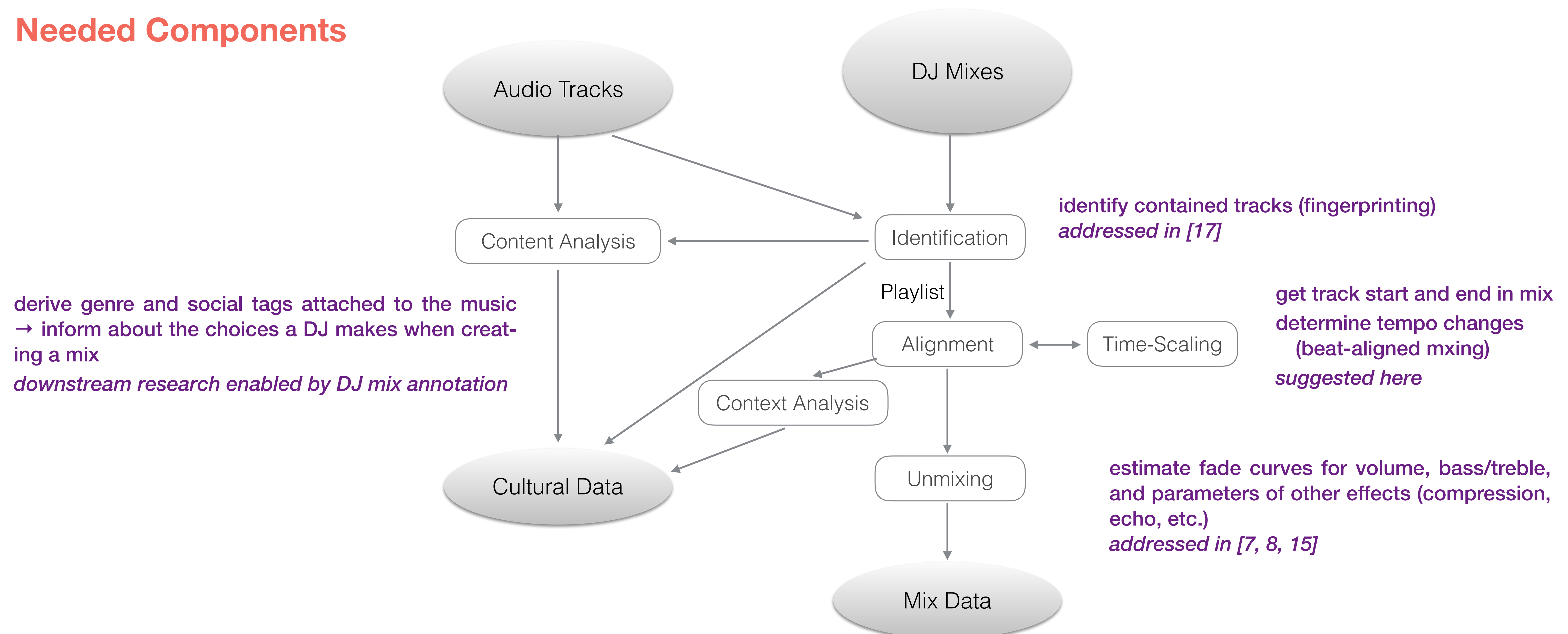
Very large scale availability (millions!) of DJ mixes, often with tracklist, e.g. <http://www.mixcloud.com>, YouTube, podcasts.

Only very few annotated databases, e.g. Sonnleitner et. al. [17]

Existing research in studio multi-track mixing in DAW [14, 11, 12, 2], with ground truth databases [4], crowd-sourced knowledge generation [5].

Existing work on DJ production tools [3, 6, 9, 1, 13], but no information retrieval from recorded mixes.

Needed Components



Proposed Method

Given: mix, identified playlist, and tracks

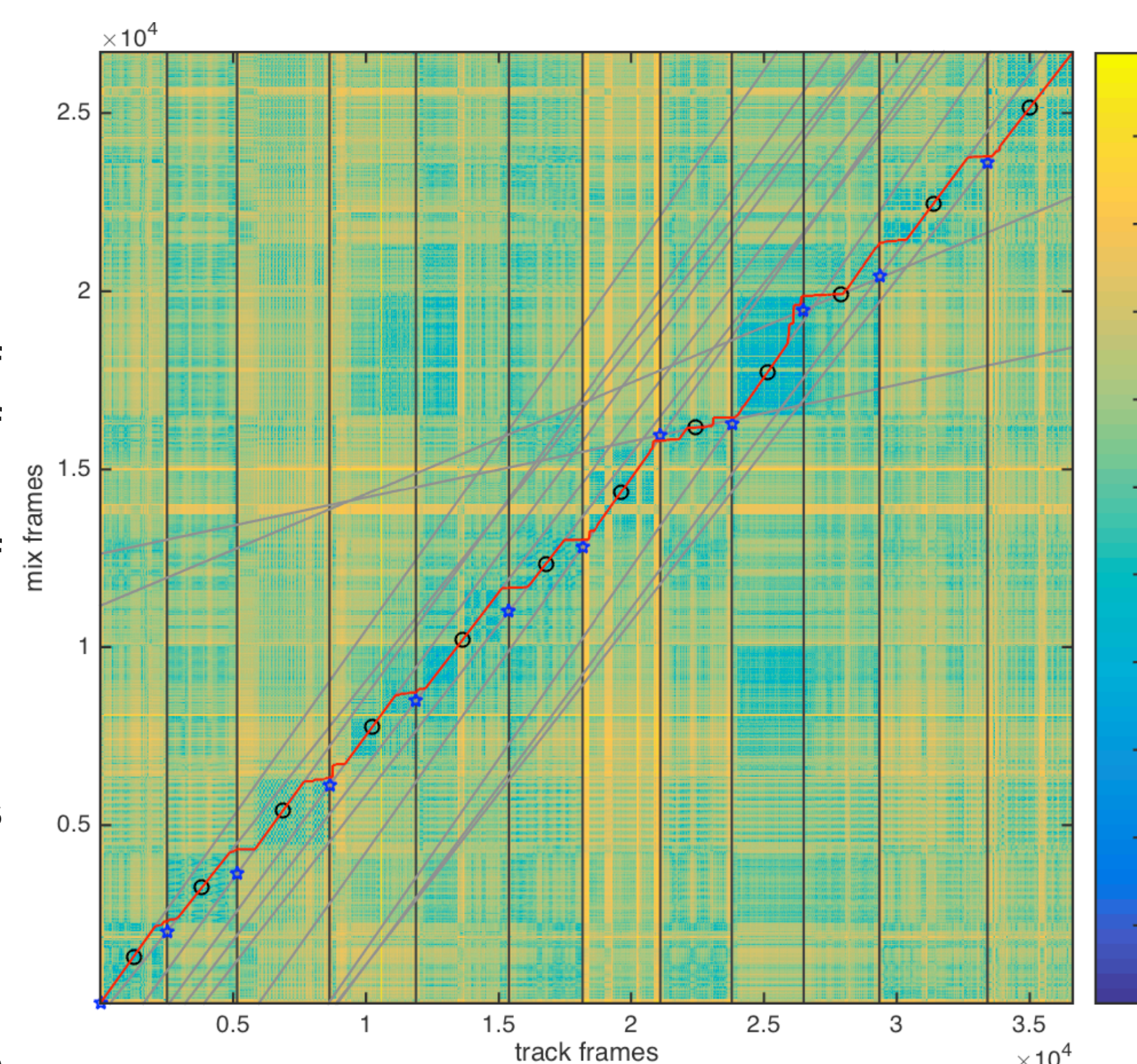
Two steps:

rough DTW alignment of concatenated MFCCs of tracks with mix

→ relative positioning of the tracks in the mix, and

→ speed up or slow down for beat-synchronous mixing

refine alignment to close in to sample precision: minimum sum of square signal distances of shifted versions



Evaluation

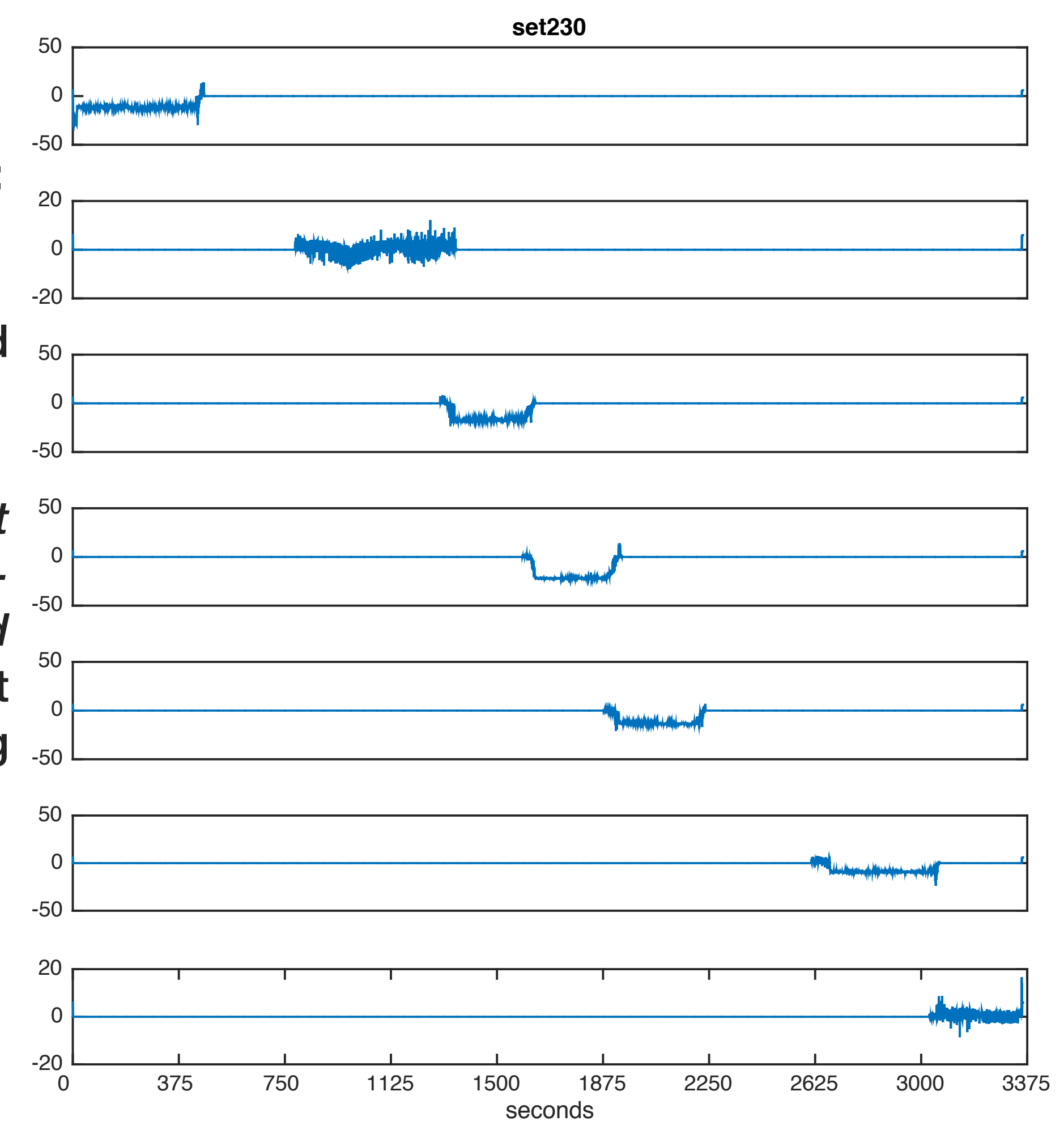
Three collections of DJ mixes:

artificial mix: ✓

existing mix collections:
no accurate track start/end times

BUT:

sample accurate alignment can be verified by attempting to remove the aligned track from the mix: subtract signal, observe resulting drop in energy (see figure)



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