

# Supplementary Materials: Psychoacoustic Approaches for Harmonic Music Mixing

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To support the main paper we provide two complete examples (both source input material and mixes under all five conditions) used in the listening experiment.

For Mix 5, the fixed input was Track 5a.wav and Track 5b.wav was the excerpt to be pitch shifted. The key estimates provided by Traktor (D minor for Track 5a.wav and F minor for Track 5b.wav) agreed with those annotated by a musical expert. Thus, for Condition B (Key Match), Track 5b.wav was transposed by -3 semitones to also be in D minor. However, both Conditions D (Min Roughness) and E (Min Roughness and Harmony) were transposed up by +1.875 and +2.875 semitones respectively. Within our experiment, Condition D achieved a higher mean consonance rating compared to Condition B, thus illustrating a good harmonic mix, which does not rely on key-based matching.

For Mix 9, the fixed input was Track 9a.wav and Track 9b.wav was the excerpt to be pitch shifted. Here, the key of Track 9b.wav was correctly estimated by Traktor as A minor. However, for Track 9a.wav it suggested F major, which does not match the expert annotation of C minor. In this case Condition B (Key Match) required a pitch shift of +5 semitones to be in the key of D minor (the relative minor of F major). Conditions D (Min Roughness) and E (Min Roughness and Harmony) were transposed by +3.25 and -1.75 semitones respectively, and both were rated more consonant than Condition B.