CLAIMS

1. A method for coding of multi-channel audio signals, the method comprising:
receiving, at a first device, a reference channel and a target channel, the reference channel including a set of reference samples, and the target channel including a set of target samples;
determining, at the first device, a variation between a first mismatch value and a second mismatch value, the first mismatch value indicative of an amount of temporal mismatch between a first reference sample of the set of reference samples and a first target sample of the set of target samples, the second mismatch value indicative of an amount of temporal mismatch between a second reference sample of the set of reference samples and a second target sample of the set of target samples;
selecting, at the first device, a particular adjustment technique from a plurality of adjustment techniques based on a comparison of the variation with a first threshold;
using the variation subsequent to the comparison, at the first device, to perform the particular adjustment technique to adjust the set of target samples to generate an adjusted set of target samples;
generating, at the first device, at least one encoded channel based on the set of reference samples and the adjusted set of target samples; and
transmitting the at least one encoded channel from the first device to a second device.

2. The method of claim 1, further comprising selecting one of a first interpolation or a second interpolation as the particular adjustment technique in response to determining whether the variation exceeds the first threshold, wherein the first interpolation is different from the second interpolation.

3. The method of claim 2, wherein performing the first interpolation comprises performing at least one among a Sinc interpolation and a Lagrange interpolation.

4. The method of claim 2, wherein performing the first interpolation comprises performing a hybrid interpolation, the hybrid interpolation includes using both a Sinc interpolation and a Lagrange interpolation.

5. The method of claim 2, wherein performing the second interpolation comprises performing an overlap and add interpolation.

6. The method of claim 5, wherein performing the overlap and add interpolation is based on the first mismatch value and the second mismatch value.

7. The method of claim 6, wherein performing the overlap and add interpolation is based on a first window function and a second window function, wherein the second window function is dependent on the first window function.

8. The method of claim 2, wherein the first interpolation is performed on a number of samples corresponding to a spreading factor.

9. The method of claim 8, wherein a value of the spreading factor is less than or equal to a number of samples in a frame of the target channel.

10. The method of claim 1, further comprising determining the first threshold based on frame type of the set of target samples.

11. The method of claim 10, wherein the frame type indicates the set of target samples corresponds to at least one among speech, music, and noise.

12. The method of claim 11, wherein determining the first threshold based on information indicating frame type of the set of target samples comprises decreasing the first threshold in response to the determination that the frame type corresponds to music.

13. The method of claim 1, further comprising determining the first threshold based on a smoothing factor, the smoothing factor indicates smoothness setting of cross-correlation value.

14. The method of claim 1, further comprising:
down-sampling the reference channel to generate a reference down-sampled channel;
down-sampling the target channel to generate a target down-sampled channel; and
determining the first mismatch value and the second mismatch value based on comparisons of the reference down-sampled channel and the target down-sampled channel.

15. The method of claim 1, further comprising determining whether to adjust the set of target samples based on one among the variation, a reference channel indicator, an energy of the reference channel and an energy of the target channel, and a transient detector.

16. The method of claim 1, wherein a first portion of the set of target samples are time-shifted relative to a first portion of the set of reference samples by an amount that is based on the first mismatch value, and wherein a second portion of the set of target samples are time-shifted relative to a second portion of the set of reference samples by an amount that is based on the second mismatch value.

17. The method of claim 1, wherein the first mismatch value corresponds to an amount of time delay between receipt of a frame of a first audio signal via a first microphone and receipt of a corresponding frame of a second audio signal via a second microphone, wherein the first audio signal corresponds to one of the reference channel or the target channel, and wherein the second audio signal corresponds to the other of the reference channel or the target channel.

18. The method of claim 1, wherein the at least one encoded channel includes a mid channel, a side channel, or both.

19. The method of claim 1, wherein a first audio signal includes one of a right channel or a left channel, and wherein a second audio signal includes the other of the right channel or the left channel, wherein the first audio signal corresponds to one of the reference channel or the target channel, and wherein the second audio signal corresponds to the other of the reference channel or the target channel.

20. The method of claim 1, wherein the first device is integrated into a mobile device or a base station.

21. A multi-channel audio coding device comprising
an encoder configured to:
receive a reference channel and a target channel, the reference channel including a set of reference samples, and the target channel including a set of target samples;
determine a variation between a first mismatch value and a second mismatch value, the first mismatch value indicative of an amount of temporal mismatch between a first reference sample of the set of reference samples and a first target sample of the set of target samples, the second mismatch value indicative of an amount of temporal mismatch between a second reference sample of the set of reference samples and a second target sample of the set of target samples;
select a particular adjustment technique from a plurality of adjustment techniques based on a comparison of the variation with a first threshold;
use the variation subsequent to the comparison to perform the particular adjustment technique to adjust the set of target samples to generate an adjusted set of target samples; and
generate at least one encoded channel based on the set of reference samples and the adjusted set of target samples; and
a network interface configured to transmit the at least one encoded channel.

22. The multi-channel audio coding device of claim 21, wherein the encoder includes a sample adjuster configured to select one of a first interpolation or a second interpolation as the particular adjustment technique based on whether the variation exceeds the first threshold, and wherein the first interpolation is different from the second interpolation.

23. The multi-channel audio coding device of claim 22, wherein the first interpolation comprises at least one among a Sinc interpolation and a Lagrange interpolation.

24. The multi-channel audio coding device of claim 22, wherein the first interpolation comprises a hybrid interpolation, the hybrid interpolation includes both a Sinc interpolation and a Lagrange interpolation.

25. The multi-channel audio coding device of claim 22, wherein the second interpolation comprises an overlap and add interpolation.

26. The multi-channel audio coding device of claim 25, wherein the overlap and add interpolation is based on the first mismatch value and the second mismatch value.

27. The multi-channel audio coding device of claim 25, wherein the overlap and add interpolation is based on a first window function and a second window function, wherein the second window function is dependent on the first window function.

28. The multi-channel audio coding device of claim 21, further comprising a shift estimator configured to determine the first mismatch value and the second mismatch value, wherein the first mismatch value and the second mismatch value are determined based on comparisons of a reference down-sampled channel to a target down-sampled channel, wherein the reference down-sampled channel is based on the reference channel, and wherein the target down-sampled channel is based on the target channel.

29. The multi-channel audio coding device of claim 21, further comprising:
a first input interface configured to receive a first audio signal from a first microphone; and
a second input interface configured to receive a second audio signal from a second microphone, wherein the first audio signal corresponds to one of the reference channel or the target channel, and wherein the second audio signal corresponds to the other of the reference channel or the target channel.

30. The multi-channel audio coding device of claim 21, wherein the encoder and the network interface are integrated into a mobile device or a base station.

31. A multi-channel audio coding apparatus comprising:
means for receiving a reference channel, the reference channel including a set of reference samples;
means for receiving a target channel, the target channel including a set of target samples;
means for determining a variation between a first mismatch value and a second mismatch value, the first mismatch value indicative of an amount of temporal mismatch between a first reference sample of the set of reference samples and a first target sample of the set of target samples, the second mismatch value indicative of an amount of temporal mismatch between a second reference sample of the set of reference samples and a second target sample of the set of target samples;
means for selecting a particular adjustment technique from a plurality of adjustment techniques based on a comparison of the variation with a first threshold;
means for using the variation subsequent to the comparison to perform the particular adjustment technique to adjust the set of target samples to generate an adjusted set of target samples;
means for generating at least one encoded channel based on the set of reference samples and the adjusted set of target samples; and
means for transmitting the at least one encoded channel.

32. The multi-channel audio coding apparatus of claim 31, wherein means for the particular adjustment technique comprises means for selecting one of a first interpolation or a second interpolation in response to determining whether the variation exceeds the first threshold, and wherein the first interpolation is different from the second interpolation.

33. The multi-channel audio coding apparatus of claim 32, wherein means for performing the first interpolation comprises means for performing at least one among a Sinc interpolation and a Lagrange interpolation.

34. The multi-channel audio coding apparatus of claim 32, wherein means for performing the second interpolation comprises means for performing an overlap and add interpolation.

35. The multi-channel audio coding apparatus of claim 31, further comprising means for determining whether to adjust the set of target samples based on one among the variation, a reference channel indicator, an energy of the reference channel and an energy of the target channel, and a transient detector.

36. The multi-channel audio coding apparatus of claim 31, wherein a first audio signal includes one of a right channel or a left channel, and wherein a second audio signal includes the other of the right channel or the left channel, wherein the first audio signal corresponds to one of the reference channel or the target channel, and wherein the second audio signal corresponds to the other of the reference channel or the target channel.

37. A non-transitory computer-readable medium storing instructions that, when executed by a processor, cause the processor to perform operations comprising:
receiving, at a first device, a reference channel and a target channel, the reference channel including a set of reference samples, and the target channel including a set of target samples;
determining, at the first device, a variation between a first mismatch value and a second mismatch value, the first mismatch value indicative of an amount of temporal mismatch between a first reference sample of the set of reference samples and a first target sample of the set of target samples, the second mismatch value indicative of an amount of temporal mismatch between a second reference sample of the set of reference samples and a second target sample of the set of target samples;
selecting, at the first device, a particular adjustment technique from a plurality of adjustment techniques based on a comparison of the variation with a first threshold;
using the variation subsequent to the comparison, at the first device, to perform the particular adjustment technique to adjust the set of target samples to generate an adjusted set of target samples;
generating, at the first device, at least one encoded channel based on the set of reference samples and the adjusted set of target samples; and
transmitting the at least one encoded channel from the first device to a second device.

38. The non-transitory computer-readable medium of claim 37, wherein the operations comprise selecting one of a first interpolation or a second interpolation as the particular adjustment technique in response to determining whether the variation exceeds the first threshold, wherein the first interpolation is different from the second interpolation.

39. The non-transitory computer-readable medium of claim 38, wherein the first interpolation comprises at least one among a Sinc interpolation and a Lagrange interpolation.

40. The non-transitory computer-readable medium of claim 38, wherein the first interpolation comprises a hybrid interpolation, the hybrid interpolation includes both a Sinc interpolation and a Lagrange interpolation.

41. The non-transitory computer-readable medium of claim 38, wherein the second interpolation comprises an overlap and add interpolation.