

CLAIMS

What is claimed is:

1. A device for interference reduction comprising:
 - a receiver configured to receive a composite signal, the composite signal having a first signal, a second signal, and a noise floor, the first signal overlapping the second signal and the noise floor including at least one interfering coherent signal; and
 - at least one processor configured to
 - determine at least one symbol rate and a modulation estimate of the first signal and the second signal,
 - resample the composite signal based on the modulation estimate at x-times the at least one symbol rate to determine at least one symbol trajectory, at least one modulation type, x being an integer greater than zero,
 - synthesize the first signal and the second signal based on the at least one modulation type and the at least one symbol trajectory,
 - receive a secondary input comprising the at least one interfering coherent signal,
 - cancel the interfering coherent signal from the noise floor, and
 - output the first signal and the second signal having a reduced noise floor.
2. The device of claim 1, wherein the secondary input comprises a coherent signal received from an adjacent receiver coupled to the at least one processor.
3. The device of claim 2, wherein the adjacent receiver comprises a WiMax antenna.
4. The device of claim 2, wherein the adjacent receiver comprises a satellite ground station.
5. The device of claim 1, wherein the processor is configured to determine the at least one symbol rate and the modulation estimate of the first signal and the second signal by exponentiating the composite signal n-times until a first power of n yields a first continuous wave corresponding to the first signal, and a second power of n yields a second continuous wave corresponding to the second signal, the first power of n corresponding to a modulation estimate for the first signal, and the second power of n corresponding to a modulation estimate for the second signal, n being an integer greater than zero; and
 - derive the at least one symbol rate corresponding to the first signal based on the first power of n and the second power of n.

6. The device of claim 1, wherein the processor is further configured to:
resample the composite signal to further determine offset information between the first signal and the second signal based on the resampling; and
synthesize the first signal and the second signal further based on offset information indicating an offset.
7. A method for interference reduction comprising:
receiving, at a receiver, a composite signal, the composite signal having a first signal, a second signal, and a noise floor, the first signal overlapping the second signal and the noise floor including at least one interfering coherent signal;
determining, by at least one processor coupled to the receiver, at least one symbol rate and a modulation estimate of the first signal and the second signal,
resampling the composite signal based on the modulation estimate at x-times the at least one symbol rate to determine at least one symbol trajectory and at least one modulation type, x being an integer greater than zero,
synthesizing the first signal and the second signal based on the at least one modulation type and the at least one symbol trajectory,
receiving a secondary input comprising the at least one interfering coherent signal,
canceling the interfering coherent signal from the noise floor, and
outputting the first signal and the second signal having a reduced noise floor.
8. The method of claim 7, wherein the secondary input comprises a coherent signal received from an adjacent receiver coupled to the at least one processor.
9. The method of claim 8, wherein the adjacent receiver comprises a WiMax antenna.
10. The method of claim 8, wherein the adjacent receiver comprises a satellite ground station.
11. The method of claim 7, wherein the determining comprises:
exponentiating the composite signal n-times until a first power of n yields a first continuous wave corresponding to the first signal, and a second power of n yields a second continuous wave corresponding to the second signal, the first power of n corresponding to a modulation estimate for the first signal, and the second power of n corresponding to a modulation estimate for the second signal, n being an integer greater than zero; and
deriving the at least one symbol rate corresponding to the first signal based on the first power of n and the second power of n.
12. The method of claim 7 further comprising

resampling the composite signal to further determine offset information between the first signal and the second signal based on the resampling; and
synthesizing the first signal and the second signal further based on offset information indicating an offset.

13. A non-transitory computer readable medium containing instructions, that when executed by a processor cause a computer to:

receive a composite signal, the composite signal having a first signal, a second signal, and a noise floor, the first signal overlapping the second signal and the noise floor including at least one interfering coherent signal;

determine at least one symbol rate and a modulation estimate of the first signal and the second signal,

resample the composite signal based on the modulation estimate at x -times the at least one symbol rate to determine at least one symbol trajectory and at least one modulation type, x being an integer greater than zero,

synthesize the first signal and the second signal based on the at least one modulation type and the at least one symbol trajectory,

receive a secondary input comprising the at least one interfering coherent signal, cancel the interfering coherent signal from the noise floor, and

output the first signal and the second signal having a reduced noise floor.

14. The non-transitory computer readable medium of claim 13, wherein the secondary input comprises a coherent signal received from an adjacent receiver coupled to the at least one processor.

15. The non-transitory computer readable medium of claim 14, wherein the adjacent receiver comprises a WiMax antenna.

16. The non-transitory computer readable medium of claim 14, wherein the adjacent receiver comprises a satellite ground station.

17. The non-transitory computer readable medium of claim 13, wherein the instructions cause the computer to determine at least one symbol rate and a modulation estimate of the first signal and the second signal, by:

exponentiating the composite signal n -times until a first power of n yields a first continuous wave corresponding to the first signal, and a second power of n yields a second continuous wave corresponding to the second signal, the first power of n corresponding to a modulation estimate for the first signal, and the second power of n corresponding to a modulation estimate for the second signal, n being an integer greater than zero; and

deriving the at least one symbol rate corresponding to the first signal based on the first power of n and the second power of n .

18. The non-transitory computer readable medium of claim 13 wherein the instructions cause the computer to:

resample the composite signal to further determine offset information between the first signal and the second signal based on the resampling; and

synthesize the first signal and the second signal further based on offset information indicating an offset.