CLAIMS

1. A method comprising:

receiving, by a mixing device, signals and a pulsed magnetic flux via input ports; and

using, by the mixing device, the signals and the pulsed magnetic flux to generate an output signal on an output port, the output signal having a waveform profile, including a magnitude of the output signal, set by the pulsed magnetic flux.

2. The method of claim 1, wherein the signals comprising a pump signal distinct from the pulsed magnetic flux, the pump signal comprising a frequency which is a difference in frequencies between the output signal and one of the signals.

3. The method of claim 1, wherein the signals comprise a first signal and a second signal at different microwave frequencies.

4. The method of any one of the preceding claims, wherein the pulsed magnetic flux is a time-varying signal having a magnitude that is modulated as a function of time.

5. The method of any one of the preceding claims, wherein the signals are continuous wave signals having an amplitude, a frequency, and a phase fixed versus time.

6. The method of any one of the preceding claims, wherein the mixing device comprises a Josephson ring modulator.

7. The method of any one of the preceding claims, wherein the waveform profile of the output signal is generated, at least in part, based on a Josephson ring modulator of the mixing device responding to the pulsed magnetic flux.

8. A method comprising:

receiving, by a circuit, signals and a pulsed magnetic flux via input ports, the circuit comprising a first mixing device coupled to a second mixing device; and

using, by the circuit, the signals and the pulsed magnetic flux to generate an output signal on an output port, the output signal having a waveform profile, including a magnitude of the output signal set by the pulsed magnetic flux. 9. The method of claim 8,

wherein the signals comprising a pump signal distinct from the pulsed magnetic flux, the pump signal comprising a frequency which is a difference in frequencies between the output signal and one of the signals.

10. The method of claim 8, wherein the pulsed magnetic flux is a time-varying signal having a magnitude that is modulated as a function of time.

11. The method of any one of claims 8 to 10, wherein one of the first mixing device and the second mixing device receives the pulsed magnetic flux and another one of the first mixing device and the second mixing device receives a fixed magnetic flux.

12. The method of any one of claims 8 to 11, wherein the first mixing device is configured to use a first microwave signal and a second microwave signal of the signals to provide an intermediate microwave signal to the second mixing device.

13. The method of any one of claims 8 to 12, wherein the second mixing device is configured to receive an intermediate signal from the first mixing device, the second mixing device being configured to use the intermediate signal as input to generate the output signal.

14. A method of configuring a circuit, the method comprising:

coupling a mixing device to a magnetic source, the mixing device being configured to receive a pulsed magnetic flux from the magnetic source via an input port; and

configuring the mixing device to generate an output signal on an output port, the output signal having a waveform profile set by the pulsed magnetic flux.

15. The method of claim 14, wherein the pulsed magnetic flux is a time-varying signal having a magnitude that is modulated as a function of time.

16. The method of any one of claims 14 to 15, wherein the waveform profile of the output signal is generated, at least in part, based on a Josephson ring modulator of the mixing device being configured to respond to the pulsed magnetic flux.

17. The method of any one of claims 14 to 16, wherein the mixing device comprises a Josephson ring modulator coupled to resonators.

18. The method of any one of claims 14 to 17, wherein the mixing device is configured to convert a continuous input microwave signal to a pulsed output microwave signal having a selected waveform profile.

19. A method of configuring a circuit, the method comprising:

coupling a first mixing device and a second mixing device in the circuit, the first mixing device being coupled to a first magnetic source to receive a fixed magnetic flux via an input port, the second mixing device being coupled to a second magnetic source to receive a pulsed magnetic flux via another input port; and

configuring the circuit to generate an output signal on an output port, the output signal having a waveform profile set by the pulsed magnetic flux.

20. The method of claim 19, wherein the pulsed magnetic flux is a time-varying signal having a magnitude that is modulated as a function of time.

21 The method of any one of claims 19 to 20, wherein the fixed magnetic flux comprises a magnitude that remains constant over time.

22. The method of any one of claims 19 to 21, wherein the first mixing device is configured to use a first signal and a second signal to provide an intermediate signal to the second mixing device.

23. The method of any one of claims 19 to 22, wherein the second mixing device is configured to receive an intermediate signal from the first mixing device, the second mixing device being configured to use the intermediate signal as input to generate the output signal.

24. A system comprising:

a first magnetic source coupled to a first part of a circuit and configured to provide a fixed magnetic flux to the first part via an input port; and

a second magnetic source coupled to a second part of the circuit and configured to provide a pulsed magnetic flux to the second part via another input port, wherein the circuit is configured to generate an output signal on an output port, the output signal having a waveform profile set by the pulsed magnetic flux.

25. The system of claim 24, wherein the first part comprises a first mixing device and the second part comprises a second mixing device.

26. The system of any one of claims 24 to 25, wherein the first part comprises a Josephson ring modulator configured to interact with the fixed magnetic flux and the second part comprises another Josephson ring modulator configured to interact with the pulsed magnetic flux.

27. The system of any one of claims 24 to 26, wherein:

the first part is configured to output an intermediate signal to the second part; and

the second part is configured to use the intermediate signal as input to generate the output signal.