What is claimed:

1. A method for performing magnetic resonance imaging comprising:

providing a magnetic resonance imaging system comprising:

a radio frequency receive system comprising a radio frequency receive coil, and

a housing, wherein the housing comprises:

a permanent magnet for providing an inhomogeneous permanent gradient field,

a radio frequency transmit system, and

a single-sided gradient coil set;

placing the radio frequency receive coil proximate a target subject;

applying a sequence of chirped pulses via the radio frequency transmit system;

applying a multi-slice excitation along the inhomogeneous permanent gradient field;

applying a plurality of gradient pulses via the single-sided gradient coil set orthogonal to the inhomogeneous permanent gradient field;

acquiring a signal of the target subject via the radio frequency receive system, wherein the signal comprises at least two chirped pulses; and

forming a magnetic resonance image of the target subject.

2. A magnetic resonance imaging system comprising:

a radio frequency receive system comprising a radio frequency receive coil configured to be placed proximate a target subject, wherein the radio frequency receive system is configured to deliver a signal of a target subject for forming a magnetic resonance image of the target subject, wherein the signal comprises at least two chirped pulses, and

a housing, wherein the housing comprises:

a permanent magnet for providing an inhomogeneous permanent gradient field, wherein the magnetic resonance imaging system is configured to apply a multi-slice excitation along the inhomogeneous permanent gradient field,

a radio frequency transmit system configured to deliver a sequence of chirped pulses, and

a single-sided gradient coil set configured to deliver a plurality of gradient pulses orthogonal to the inhomogeneous permanent gradient field.

3. The system of claim 2, further comprising a power source, wherein the power source is configured to flow current through at least one of the radio frequency transmit system, and the

single-sided gradient coil set, to generate an electromagnetic field in a region of interest, wherein the region of interest encompasses the target subject.

4. The system of claim 3, wherein the region of interest has a diameter of 4 to 12 inches.

5. The system of claim 2, wherein the magnetic resonance imaging system is configured to apply [[a]]the multi-slice excitation comprising exciting multiple slices along an axis of the inhomogeneous permanent gradient field, wherein each of the multiple slices has a bandwidth that is similar to the broad bandwidth of the chirped pulses.

6. The system of claim 2, wherein the chirped pulses comprise identical bandwidths and differing durations.

7. The system of claim 2, wherein the chirped pulses have a bandwidth ranging from 1 kHz to 10 kHz, 10 kHz to 40 kHz, 40 kHz to 100 kHz, 100 kHz to 400 kHz, 400 kHz to 1 MHz, or any ranges of bandwidth thereof.

8. The system of claim 2, wherein the chirped pulses are configured to produce a 1-dimensional signal along an axis of the inhomogeneous permanent gradient field.

9. The system of claim 8, wherein the 1-dimensional signal is a first 1-dimensional signal, and the gradient pulses are configured to produce a second 1-dimensional signal and a third 1-dimensional signal that are orthogonal to each other and to the axis of the inhomogeneous permanent gradient field.

10. The system of claim 2, wherein the gradient pulses are configured for encoding spatial information to the signal.

11. The system of claim 2, wherein the combination of the inhomogeneous permanent gradient field and the chirped pulses are configured for slice selection in the inhomogeneous permanent gradient and a frequency encoding gradient.

12. The system of claim 2, wherein the target subject is an anatomical portion of a body.

13. The system of claim 2, wherein the radio frequency receive coil comprises an array of receive coils and each of the array of receive coils is configured for specific anatomical portion of a body.

14. The system of claim 2, wherein the chirped pulses induce a signal in the target subject, and the radio frequency receive coil is configured to receive the signal.

15. The system of claim 2, wherein each of the at least two chirped pulses are split into two components that are 90 degrees out of phase.

16. The system of claim 2, wherein the radio frequency transmit system further comprises two separate ports configured to generate the at least two chirped pulses.

17. The system of claim 2, wherein the magnetic resonance imaging system further comprises a signal conditioning box and a control system, wherein the signal conditioning box is configured to turn the control system on and off with a blanking signal.

18. The system of claim 17, further comprising a radio frequency amplifier, the amplifier enabled and disabled when the control system is turned on and off with the blanking signal.

19. The system of claim 3, wherein the radio frequency transmit system comprises a transmit coil that is non-planar and oriented to partially surround the region of interest.

20. The system of claim 19, wherein the magnetic resonance imaging system further comprises a tuning box, wherein the tuning box is configured to alter the frequency response of the transmit coil.

21. The system of claim 3, wherein the single-sided gradient coil set is non-planar and oriented to partially surround the region of interest, and wherein the single-sided gradient coil set is configured to project a magnetic field gradient to the region of interest.

22. The system of claim 3, wherein the radio frequency receive coil is a flexible coil configured to be affixed to an anatomical portion of a patient for imaging within the region of interest.

23. The system of claim 3, wherein the radio frequency receive coil is in one of a single-loop coil configuration, figure-8 coil configuration, or butterfly coil configuration, wherein the radio frequency receive coil is smaller than the region of interest.

24. The system of claim 19, wherein the transmit coil and the single-sided gradient coil set are concentric about the region of interest.

25. A non-transitory computer-readable medium in which a program is stored for causing a computer to perform a method for performing magnetic resonance imaging, the method comprising:

providing a magnetic resonance imaging system comprising:

a radio frequency receive system comprising a radio frequency receive coil, and

a housing, wherein the housing comprises:

a permanent magnet for providing an inhomogeneous permanent gradient field,

a radio frequency transmit system, and

a single-sided gradient coil set;

placing the radio frequency receive coil proximate a target subject;

applying a sequence of chirped pulses via the radio frequency transmit system;

applying a multi-slice excitation along the inhomogeneous permanent gradient field;

applying a plurality of gradient pulses via the single-sided gradient coil set orthogonal to the inhomogeneous permanent gradient field;

acquiring a signal of the target subject via the radio frequency receive system, wherein the signal comprises at least two chirped pulses; and

forming a magnetic resonance image of the target subject.