What is Claimed:

1. A magnetic resonance system comprising:

a static field magnet, wherein the magnet is configured to provide a low static external magnetic field to a given field of view; and

a radio frequency coil configured to apply pulsed cycling radio frequency field to the low static external magnetic field.

2. The system of claim 1, wherein the static field magnet comprises a bore in its center, the bore having a diameter between 1 inch and 20 inches.

3. The system of claim 1, wherein the given field of view is a spherical or cylindrical field of view, wherein the spherical field of view is between 2 inches and 20 inches in diameter or the cylindrical field of view is approximately between 2 inches and 20 inches in length.

4. The system of claim 1, further comprising:

a field cycling magnet is disposed proximate to the low static external magnetic field.

5. The system of claim 1, wherein the low static magnetic field ranges from 10 mT to 1 T.

6. The system of claim 1, wherein the cycling radio frequency field ranges from 1 μT to 1 mT.

7. The system of claim 1, wherein the magnetic resonance system is a single-sided magnetic resonance imaging system that comprises a magnetic resonance imaging scanner or a magnetic resonance imaging spectrometer.

8. A magnetic resonance system comprising:

a static field magnet, wherein the magnet is configured to provide a low static external magnetic field to a given field of view; and

a field cycling magnet disposed proximate to the static field magnet and is concentric with the static field magnet.

9. The system of claim 8, further comprising:

a radio frequency coil configured to apply pulsed cycling radio frequency field to the low static external magnetic field.

10. The system of claim 9, wherein the field cycling magnet is configured for altering the low static external magnetic field when the radio frequency coil is not being used.

11. The system of claim 8, wherein the low static magnetic field ranges from 10 mT to 1 T.

12. The system of claim 8, wherein the field cycling magnet has a magnetic field strength from 0.5 mT to 1 T.

13. The system of claim 8, wherein the magnetic resonance system is a single-sided magnetic resonance imaging system that comprises a magnetic resonance imaging scanner or a magnetic resonance imaging spectrometer.

14. A magnetic resonance system comprising:

a static field magnet, wherein the magnet is configured to provide a low static external magnetic field to a given field of view;

a radio frequency coil; and

a field cycling magnet.

15. The system of claim 14, wherein the static field magnet comprises a bore in its center, the bore having a diameter between 1 inch and 20 inches.

16. The system of claim 14, wherein the given field of view is a spherical or cylindrical field of view, wherein the spherical field of view is between 2 inches and 20 inches in diameter or the cylindrical field of view is approximately between 2 inches and 20 inches in length.

17. The system of claim 14, wherein the field cycling magnet is configured for altering the low static external magnetic field when the radio frequency coil is not being used.

18. The system of claim 14, wherein the low static magnetic field ranges from 10 mT to 1 T.

19. The system of claim 14, wherein the low static magnetic field ranges from 20 mT to 100 mT.

20. The system of claim 14, wherein the magnetic resonance system is a single-sided magnetic resonance imaging system that comprises a magnetic resonance imaging scanner or a magnetic resonance imaging spectrometer.