12. The magnetometer of claim **11**, wherein a function for frequency response correction is approximated by division.

13. The magnetometer of claim **12**, further comprising a closed loop automatic gain control circuit configured to control the amplitude of the even harmonics.

14. The magnetometer of claim **12**, further comprising an open loop homomorphic automatic gain control system configured to control the amplitude of the even harmonics.

15. The magnetometer of claim **11**, wherein a function for frequency response correction is approximated by pulse width modulation.

16. The magnetometer of claim **15**, wherein a signal for the pulse width modulation may be converted to a digital number.

17. The magnetometer of claim **16**, wherein the digital number is a single bit.

18. The magnetometer of claim **16**, wherein the digital number is used to increment or decrement a counter.

19. The magnetometer of claim **18**, wherein the counter is used as an integrator portion of a servo system to cause a Larmor signal to track an ideal Larmor frequency.

20. The magnetometer of claim **19**, wherein the counter is designed with a circuit that causes repeated bits of the same value to cause increasing increment values and different bits to cause decreasing increment values.

21. A method for approximation of a function for frequency response correction in a magnetometer, the method comprising:

measuring a displacement in time of zero crossings of a harmonic frequency, wherein the harmonic frequency comprises a small fundamental frequency developed by modulating a Larmor signal and a larger even harmonic frequency developed by modulating the Larmor signal; and

approximating the amplitudes of the small fundamental frequency and the even harmonic frequency by using the displacement in time of zero crossings as a value for a ratio proportional to a ratio of the amplitudes.

* * * * *