CLAIMS

1. A method of determining a position of a rotor of a brushless permanent magnet motor, the method comprising measuring phase current flowing through a phase winding of the motor during excitation of the phase winding, measuring voltage applied to the phase winding of the motor during excitation of the phase winding, calculating a phase of back EMF induced in the phase winding using the measured phase current and the measured voltage, determining a zero-crossing point of the back EMF induced in the phase winding using the calculated phase of back EMF induced in the phase winding, and determining an aligned position of the rotor of the brushless permanent magnet motor when the back EMF induced in the phase winding is at the zero-crossing point.

2. The method as claimed in Claim 1, wherein the phase of back EMF induced in the phase winding is calculated using the equation $E = L\frac{dI}{dt} + IR - V_{PH}$, where E is the back EMF induced in the phase winding, L is the inductance of the phase winding, I is the phase current flowing through the phase winding, R is the resistance of the phase winding, and V_{PH} is the voltage across the phase winding.

3. The method as claimed in Claim 1 or Claim 2, wherein the method comprises measuring phase current over a plurality of excitation pulses applied to the phase winding.

4. The method as claimed in Claim 3, wherein the method comprises measuring phase current over each excitation pulse applied to the phase winding.

5. The method as claimed in any preceding claim, wherein measuring current flowing through the phase winding of the motor comprises measuring average

phase current flowing through the phase winding of the motor and/or measuring instantaneous phase current flowing through the phase winding of the motor.

6. The method as claimed in any preceding claim, wherein measuring voltage applied to the phase winding of the motor during excitation of the phase winding comprises measuring average DC voltage and/or measuring instantaneous DC voltage applied to the phase winding of the motor during excitation of the phase winding.

7. The method as claimed in any preceding claim, wherein the method comprises commutating the phase winding relative to the determined zero-crossing point of back EMF induced in the phase winding.

8. The method as claimed in any preceding claim, wherein determining the zero-crossing point of the back EMF induced in the phase winding may further comprise utilising any or any combination of an amplitude representative of the amplitude of back EMF induced in the phase winding, and a frequency representative of the frequency of back EMF induced in the phase winding.

9. The method as claimed in any preceding claim, wherein calculating the phase of back EMF induced in the phase winding comprises integrating the equation $E = L\frac{dI}{dt} + IR - V_{PH}$ to obtain a relationship representative of integrated back EMF.

10. The method as claimed in Claim 9, wherein calculating the phase of back EMF induced in the phase winding comprises equating integrated back EMF to an integral of a sinusoidal waveform representative of back EMF induced in the phase winding.

11. The method as claimed in Claim 10, wherein calculating the phase of back EMF induced in the phase winding comprises equating a relationship representative of integrated back EMF with an integral of a sinusoidal waveform representative of back EMF induced in the phase winding.

12. The method as claimed in any of Claims 1 to 8, wherein calculating the phase of back EMF induced in the phase winding comprises calculating at least one instantaneous back EMF value using the measured instantaneous phase current and the measured voltage.

13. The method as claimed in Claim 12, wherein instantaneous back EMF values are calculated using the equation $E = L\frac{dI}{dt} + IR - V_{PH}$.

14. The method as claimed in Claim 12 or Claim 13, wherein calculating the phase of back EMF induced in the phase winding comprises integrating calculated instantaneous back EMF values.

15. A brushless permanent magnet motor comprising a controller configured to measure instantaneous phase current flowing through a phase winding of the motor during excitation of the phase winding, measure voltage applied to the phase winding of the motor during excitation of the phase winding, calculate a phase of back EMF induced in the phase winding using the measured instantaneous phase current and the measured voltage, determine a zero-crossing point of the back EMF induced in the phase winding using the calculated phase of back EMF induced in the phase winding, and determine an aligned position of the rotor of the brushless permanent magnet motor when the back EMF induced in the phase winding is at the zero-crossing point.

16. A data carrier comprising machine readable instructions for the operation of a controller of a brushless permanent magnet motor to measure instantaneous

phase current flowing through a phase winding of the motor during excitation of the phase winding, measure voltage applied to the phase winding of the motor during excitation of the phase winding, calculate a phase of back EMF induced in the phase winding using the measured instantaneous phase current and the measured voltage, determine a zero-crossing point of the back EMF induced in the phase winding using the calculated phase of back EMF induced in the phase winding, and determine an aligned position of the rotor of the brushless permanent magnet motor when the back EMF induced in the phase winding is at the zero-crossing point.