Computation of neutral points in magnetic flux density due to magnets in magnetic motor for cogging reduction

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The magnetic field of the permanent magnet is analytically derived by using basic principles of the magnetism in very easier approach. The derived formula is easier in comparison to the methods that use Legendre polynomials, toroidal harmonics and hyper-geometric series. Concepts of origin shifting and geometrical shape transformation are used. Derivations are done in Cartesian co-ordinate system so that application becomes much easier and faster. This approach is equally applicable for the analysis of magnetic field distribution in space around for permanent magnet as well as electromagnet. Magnetic field visualization is also done for both magnitude and direction by using MATLAB. The idea of flux and field cancellation is used in order to visualize and locate the neutral points in order to reduce the effect of cogging in the permanent magnet motor.

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