**Signal generated by an oscillating coil**

Consider a coil that oscillates in the Earth’s magnetic field with an angular frequency ω = 2π \* f, and suppose that the axis of the oscillations is perpendicular to the magnetic field vector. Then the current angle between the axis of the coil and the magnetic field vector can be expressed as

where t – time; – max angle of the oscillations; – angle between the axis of the coil and magnetic field in the absence of oscillations.

Magnetic flux through the coil can be defined as

where Φ0 – magnetic flux through the coil in the absence of oscillations.

According to the Faraday’s law

Derivative of a complex function

Therefore

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Program fft\_application.exe models the output from the coil with different settings.