signal-to-noise ratio, overall weight, maximum dimensions, and bandwidth must all be taken into account during the design and optimization process. The concept of an orthogonal induction magnetometer array (OIMA) is presented in this work. A three component array is built of light weight elemental induction magnetometers (EIMs) to replace the three orthogonal CIMs. The OIMA provides significant signal-to-noise ratio and bandwidth improvements over prior art.

Optimization of a 3-axis induction magnetometer for airborne time domain electromagnetic geophysical surveys

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Geophysical surveys using transient electromagnetic methods are used extensively in the exploration for massive sulphides and ground water, and for locating contaminant plumes. When large areas must be explored economically, an airborne survey is usually favoured. The design of a survey system must include a very sensitive receiver with large dynamic range and with minimum noise. Typically, the receiver system is made of a set of three orthogonal conventional induction magnetometers (CIM).

The design and optimization of induction magnetometers for airborne time domain electromagnetic is not simple. The