MultiLoop III

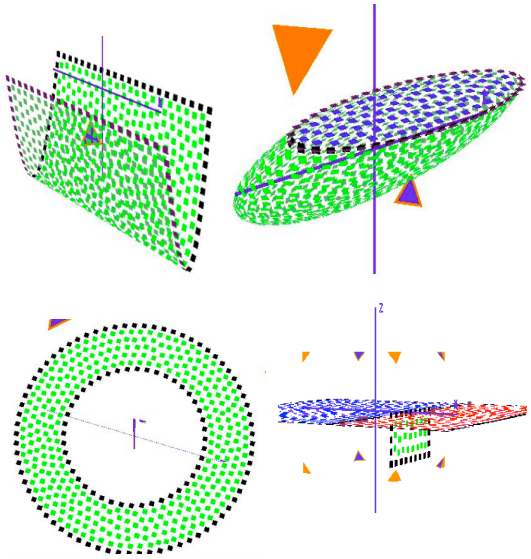
Electromagnetic Modelling of Complex Thin Sheets

MultiLoop III is computes electromagnetic scattering by thin sheet geometries using a mesh. Applications include mineral prospecting, environmental mapping, ordinance detection and a variety of electrical engineering problems.

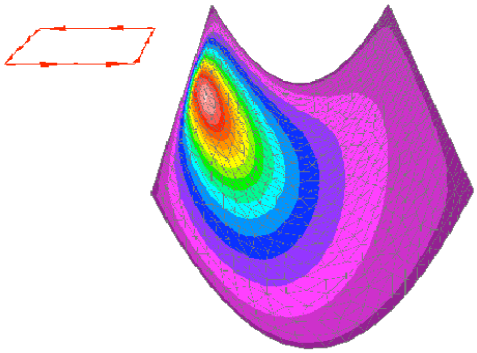
Solutions are automatically built from the mesh with a proprietary geometrical optimization algorithm - no direct user interaction with the mesh is required. Meshes of over 1800 nodes can easily be handled on a standard notebook computers by an optimized time-stepping algorithm.

Shapes: MultiLoop III can efficiently model a diverse number of shapes including:

- bent and deformed sheets,
- closed shells
- sheets with holes
- infinite and semi-infinite sheets,
- multiple inductively coupled sheets and
- sheets welded to form triple junctions
- various combinations of the above

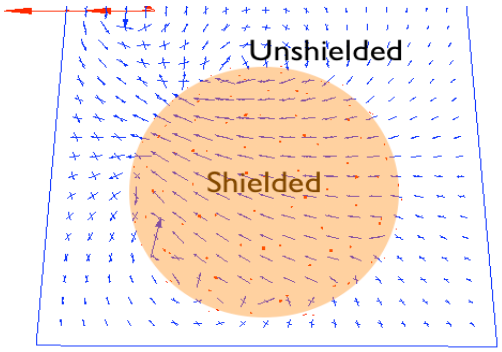


Stream Potential: MultiLoop III computes the response to a target to a variety of waveforms. To do this, it first computes the response to a step-on in primary current. Colour images of the current stream potential to the step-on can be viewed as movies.This capability is helpful for understanding the response of the body. Additionally, the stream potential can be plotted at the inductive and resistive limits.



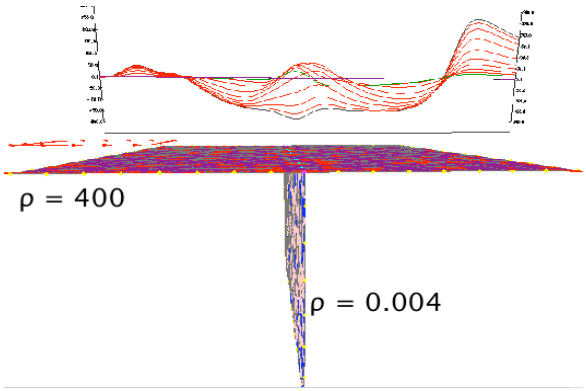
Stream potential at the inductive limit

Vector Plots: Vector plots are also useful for understanding how fields are scattered in the vicinity of the conductor. In the example below, a vector plot of the primary field has been overlain onto the scattered response of a sphere shortly after the loop current has been turned off.



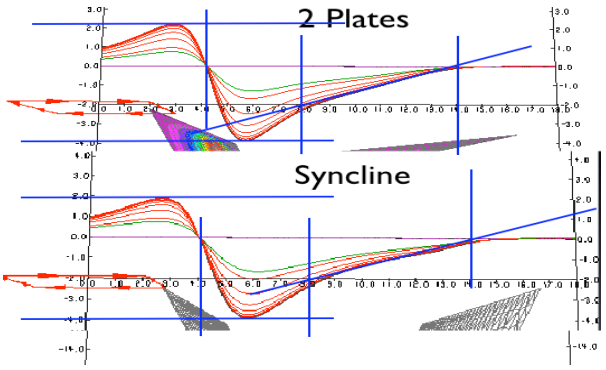
Vector plot of the primary and scattered field

Profile response: The response of a conductor along profiles and boreholes can be simulated with MultiLoop III. In the figure below, the effect of current gathering by a conductor in in galvanic contact with overburden has been simulated.



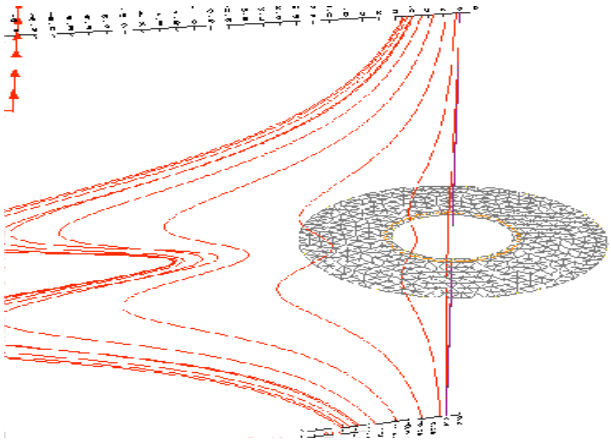
Hz profile response illustrating current gathering

Improving geophysical interpretation: Much of our knowledge of electromagnetic interpretation theory comes from the simple plate model. The plate model is satisfactory in many situations, but when conductors are more complicated or interact, using the plate model can cause misleading interpretations. In the figures below, the response of a syncline is shown to be identical to two plates. Interpreting folded geology with the plate model can cause unwanted errors.



Response of two plates (top) is compared with a syncline (bottom). Only the upper limbs on the syncline are illustrated.

Improving borehole interpretation: The electrical environment surrounding an ore body is rarely simple. Often conductors are intruded, leading to nonconductive "holes" within a conductor. MultiLoop III can correctly account for the presence of holes in a conductor as illustrated below.



In-hole response of a "missed" drill target

Operating information: MultiLoop III is available for use on machines running MacIntosh OS X with G4 or G5 processors.

Licenses: Licenses are available on a purchase or a lease basis, with special rates available for sites requiring more than one license. Refer to rate information published on the MultiLoop III web site.

Contact information: For more information, refer the MultiLoop III web page

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