Edge-elements for geophysical electromagnetic problems: A new implementation challenge
Octavio Castillo, Josep de la Puente, Vladimir Puzyrev, José María Cela
CASE Department
Barcelona Supercomputing Center

Motivation & goal
- Exploration geophysics is of great societal value
- Electromagnetic Methods (EM) are an established tool in geophysics
- Edge-elements for electromagnetic simulations: No spurious solutions

Key issues
- To ensure tangential continuity, a unique global edge direction should be defined.
- Primary field is calculated analytically for a background layered-earth model.
- Secondary field is discretized using edge-elements.

Formulation
- Edge-elements (Nédélec) Method uses vector basis functions
- Divergence free but not curl free

Framework
- Flexible
- Not dependent on a specific mesh generator
- Hybrid parallel approach
- Able to work with unstructured meshes

Preliminary results
- Convergence test
- Z-directed dipole

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