**2D FEM with Higher Order Basis Functions**

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**Abstract – A two dimensional finite element method (MOM) simulation is presented. A normally incident plane impinges upon an infinitely long perfect electric conducting cylinder.**

1. **INTRODUCTION**
2. **FORMULATION**
   1. **Discretization**
   2. **Boundary Conditions (D- EFIE, B-MFIE)**
   3. **Fundamental Equations (D-EFIE,B-MFIE)**
      1. **Point Matching**
      2. **N-Point Quadrature**
   4. **Matrix Formulation (D-EFIE, B-MFIE)**
      1. **Singularity Extraction**
3. **RESULTS**
   1. **Error**
   2. **Convergence**
4. **Future Work**

Figure 5 Top: Ez Reflection Coefficient Bottom: Hz Reflection Coefficient Comparison to [1]

* 1. **CFIE**
     1. **Internal Resonance**
  2. **TMz**

1. **CONCLUSION**
2. **REFERENCES**
3. J. Jin, *The Finite Element Method in Electromagnetics*, 2nd edition, Wiley, 2002.