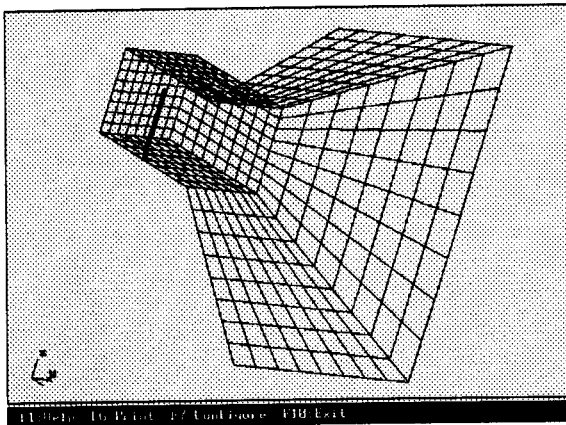


## WIPL - PROGRAM FOR ANALYSIS OF COMPOSITE WIRE AND PLATE STRUCTURES

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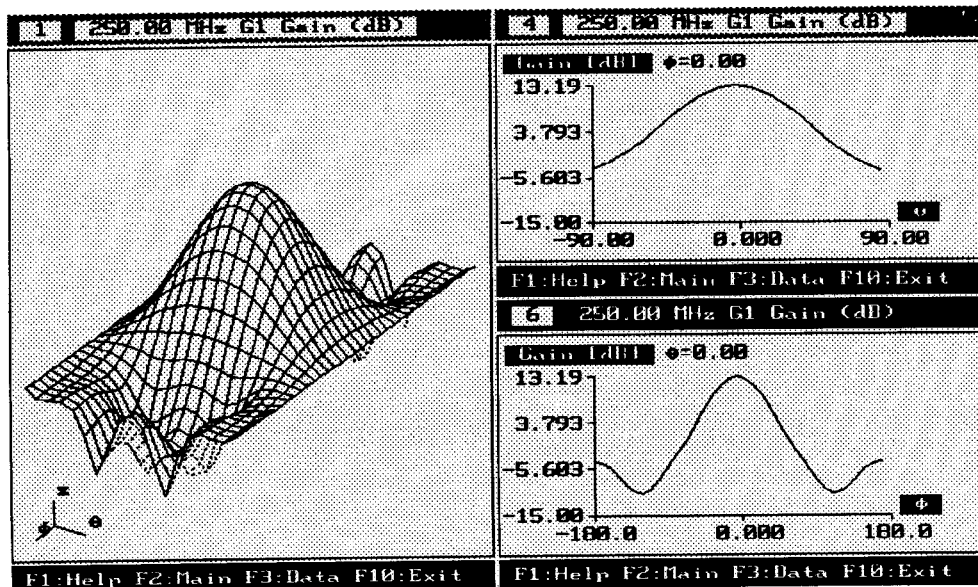
WIPL is a powerful program that allows fast and accurate analysis of metallic antennas, scatterers, and passive microwave circuits. This user-friendly program enable the user to interactively define the geometry of any metallic structure (even a very large structure) as a combination of wires and plates, and then check this data by using a 3D drawing of the structure. WIPL's sophisticated analysis features include evaluations of the current distribution, radiation patterns, and admittance parameters. WIPL also provides the user with a variety of list and graphic output capabilities, including 2D and 3D graphics. WIPL efficiently executes most computations in under 60 seconds, making the software ideal for CAD.



SHOW screen: half of horn antenna

WIPL offers these key features:

- In the general case geometry of wires is approximated by truncated cones. (In the particular case a truncated cone degenerates into a cylinder, a cone, a disc and a flat ring.)
  - In the general case the geometry of plates is approximated by bilinear surfaces, i.e. surfaces completely determined by four corner points. (In the particular case a bilinear surface degenerate into a flat quadrilateral, rectangle, triangle, square, etc.)
  - Electrically long wires and large plates are automatically partitioned into sub-wires and sub-plates.
  - Wire-to-plate junctions are treated by using special automatic segmentation technique which is based on the model of localized junction.
  - The current along wires and over plates are approximated by polynomial expansions, whose basis functions automatically satisfy the continuity equations at the element junctions and free ends.
  - The topological analysis is automatically performed and optimal current expansion orders are adopted. (For long wires 3 unknowns per wavelength, and for large plates 10 unknowns per wavelength squared.)
- Unknown current expansion coefficients are determined by applying the entire-domain Galerkin method to solve the EFIE for current distribution.



GRAPH screen: 2D and 3D graphs of gain of horn antenna.