

## **Electromagnetic Interaction with Aircraft**

Project duration: 08/19/2004 – 12/17/2004

The current project Blitzen is developed in the Antenna Research Laboratory under contract with the Boeing Company, Philadelphia . It consists in applying and developing proprietary software in order to predict the indirect effects of lightning on an aircraft structure and circuits.

The model is based on a circuit network approach that represents every investigated element structure by an R, L branch. The overall circuit is subjected to the lightning excitation and the resulting linear system is solved by:

1. An original interpretation of the Laplace Technique
2. A straightforward application of the State Variable Approach (SVA)

Both Calculations are compared to experimental data and shown to be very close to it. The evaluation of each method of calculation shows that the State variable Approach is made without any approximations, is faster than the Laplace Technique and more convenient for lightning problems because it is carried directly in the time domain.

Extended application of this work deals with the Electromagnetic Pulse (EMP) effects calculations.