



GALAXY ADVANCED ENGINEERING, INC.
P.O. BOX 614
BURLINGAME, CALIFORNIA 94011
Tel: (650) 740-3244
Fax:(650) 347-4234
E-mail bahmanz@aol.com

AIRDIF/PC

A Two - Dimensional Atmospheric Radiation Diffusion Code for PC

The existing threat of nuclear war and our national defense policy of deterrence make it necessary to be able to evaluate the ability of aerospace vehicles to operate in the environment of a nuclear explosion. These evaluations are referred to as nuclear Survivability/Vulnerability studies. An integral part of these studies is the determination of the radiation environments from nuclear detonations. This must be done as a function of spatial location throughout the region of interest and involves the transport of nuclear weapon radiation in the atmosphere and the determination of the interaction of this radiation with aerospace vehicles. These transport calculations have been carried out either by Monte Carlo simulation or by the method of Mass Integral Scaling (MIS).

AIRDIF\PC code in an "in between" method. It is a true two dimensional calculation but one which involves several simplifying assumptions which permit its execution in a fraction of the time required for a Monte Carlo calculation. Nevertheless the agreement between **AIRDIF\PC** and Monte Carlo is excellent for altitudes up to 25 Km. The basis of **AIRDIF** are a special form of the multigroup diffusion equation. The simplifying assumptions are those inherent in the use of the diffusion equation: namely, that the region of interest is larger with respect to the radiation mean free path. The spatial variation is slowly varying and the directional distribution of the radiation flux is linear with the cosine of directional angle.

The **AIRDIF/PC** code is user oriented in that it is simple to operate and does not require an extensive knowledge of diffusion theory or computer technology. **AIRDIF\PC** produces radiation environments in one-dimensional (1-D) infinite homogeneous air as well as 2-D variable density air.

We at **Galaxy Advanced Engineering, Inc. (GAE)** have taken the steps to produce the PC version i.e. **AIRDIF/PC**. Currently the program is operating on IBM/PC AT or 100% compatibles under PC/DOS or MS/Windows 95/98/2000/XP/ME or NT operating system. To obtain the code and more information, please contact our company or call us at 650-302-3993.