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FSCATT/PC

An Energy Deposition and Transport Program for Personal Computer

FSCATT/PC is an energy deposition and transport code for slab geometry which includes the effects of photoelectric absorption, fluorescence, and Compton scattering. The intensity of the secondary radiation field (scattered or fluorescent radiation) is resolved using discrete angular and energy groups. The mesh (one or more material layers) is swept alternately in the forward and backward direction until the energy remaining to be distributed is less than some specified fraction of the initial energy incident on the mesh. The motivation for using this type of numerical technique is to overcome the expense and uncertainty involved when using Monte Carlo codes. Observations indicate that results at least as accurate as those obtained with Monte Carlo codes can be obtained with substantially less computer time using the **FSCATT/PC** code. The preceding statement is not intended to imply that all **FSCATT/PC** calculations are inexpensive. While the majority of calculations run rapidly, increasing the number of angular groups and energy groups used to resolve the scattered and fluoresced energy increases the running time in a nonlinear fashion.

FSCATT/PC is designed to allow the experienced user a great deal of latitude in problem definition while at the same time being a fairly automatic and simple code for the inexperienced user to operate. All of the physical data needed for 40 elements are contained in the code as are the data for a blackbody (Planck) spectrum. **FSCATT/PC** allows for the following radiation source options:

1. A blackbody spectrum
2. A mixture of 1 to 10 different temperature blackbody spectra, either:
3.
    a) distributed over 90 energy groups, each containing equal amounts of energy, or
    b) distributed over an energy group structure supplied by the user.

3. A spectrum read from file
4. Data supplied by the user consisting of points describing the spectrum(energy, intensity) and the number of energy groups desired between adjacent points
5. The angle of incidence of the radiation on the slab can be specified for any of the spectrum options.

The geometry of the code allows for the specification of 10 material layers each consisting of up to five individual constituents (elements). In addition, the various physical processes accounted for in **FSCATT/PC** (i.e., photoelectric absorption, fluorescence, and scattering) can be suppressed by the user in individual layers, thus decreasing the computer time required to complete a calculation.

We at **Galaxy Advanced Engineering, Inc. (GAE)** have taken the steps to produce the PC version of **FSCATT** (i.e. **FSCATT/PC**). Currently the program is operating on PC or 100% compatibles under PC/DOS or MS/Windows95/98 and NT operating system. To order this code, please contact our company at (650)525-1314