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FACET/PC
A Radiation View Factor Computer Code for Axisymmetric, 2D Planar and 3D Geometries with Shadowing Program for PC

The computer code **FACET/PC** calculates the radiation geometric view factor (alternatively called shape factor, angle factor, or configuration factor) between surfaces for axisymmetric, two-dimensional planar and three-dimensional geometries with interposed third surface obstructions. **FACET** was developed to calculate view factors for input to **finite element** heat transfer analysis codes.

The finite difference computer code TRUMP was used for heat transfer analysis at LLNL during the 1970's. Geometric black body radiation node-to-node view factors were calculated using CNVUFAC. CNVUFAC was originally developed by General Dynamics and subsequently modified by J.C. Oglebay from NASA - Lewis and finally by R.W. Wong at LLNL. The computer code GRAY was used to calculate gray body exchange factors using as input the black body view factors calculated by CNVUFAC.

From 1979, the finite element computer code TACO has been used for heat transfer analysis at LLNL. There are several computer codes available to calculate view factors for finite element models. The code VIEW a modified version of RAVFAC, was developed to support the NASTRAN thermal analysis program. This code is presently being used at ORNL. Generation of an input deck for VIEW is very cumbersome. The code SHAPEFACTOR uses the contour integration technique originally developed by Mitalas and Stephenson to calculate view factors for a 3D finite element mesh. SHAPEFACTOR is very inefficiently coded and does not use dynamic storage allocations. The code GLAM is adaptable to a finite element grid to calculate view factors for axisymmetric geometries with shadowing surfaces. Generation of an input deck for GLAM is very straightforward, the code calculates accurate view factors, and is presently being supported. The code MONTE, using a Monte Carlo method, can be used to calculate exchange factors (i.e. script *f)* for specular emitting and reflecting surfaces for 2D planar geometries. I'm sure there are many other codes available and would appreciate being informed of their existence.

We at **Galaxy Advanced Engineering, Inc. (GAE)**. have taken steps to develop the same capability of the code for PC users. Currently the code is running on either PC/DOS or PC/Windows/95/98/2000 and NT or %100 compatibles with or without a math coprocessor.