

A Visual User Interface Program for EGS4

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To overcome the inconvenience and difficulty in using the EGS4 code by novice users, a visual user interface program, called the EGSWIN system, has been developed by the Monte Carlo Research Center of Tsinghua University. The EGSWIN system makes it possible for users to run EGS4 easily for many applications without in-depth knowledge of EGS4.

EGSWIN is fully integrated into the EGS4 code. It can work under the system of Windows (WIN98/NT/2000/XP) with a user-friendly visual interface as well as some powerful auxiliary tools. EGSWIN was developed using the utilities of Visual C++ and Visual Fortran. A mixed-language programming technique was used in order to embed both the EGS4 and PEGS4 (in Fortran modules) into the main EGSWIN code, which was programmed in Visual C++ language.

The main parts of the EGSWIN system include:

- 1) Visual Geometry Input module: Users could input the parameters of the bodies and regions while getting a colorful 3D display of the geometry simultaneously. It is quite convenient and explicit with the integration of OpenGL environment.
- 2) Program Running module: Users could input the information of the sources, materials, and scoring types (such as surface current, surface fluence, and energy deposition in regions). This module processes the input information and then simulates the transport of the particles using the kernel of EGS4 with the integration of PEGS4 and PRESTA algorithm. In addition, the function of parallel computing may help users to accelerate the computing process.
- 3) Track Display module: Users can choose the particle tracks and the geometry that they are interested in and get the corresponding 3D display by VRML.

Comparisons of the calculated results of EGS4, with and without the use of EGSWIN, have been made to validate EGSWIN. A practical example will be used to show the interface and functions of the EGSWIN system.

Below are the interfaces of the system.(These are the Chinese version. Later the English version will be available.)

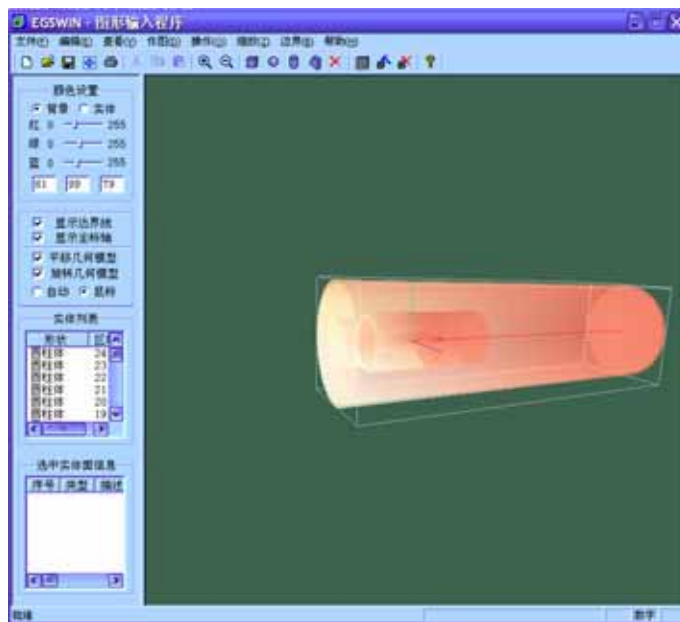


Fig.1 Graphical user interface

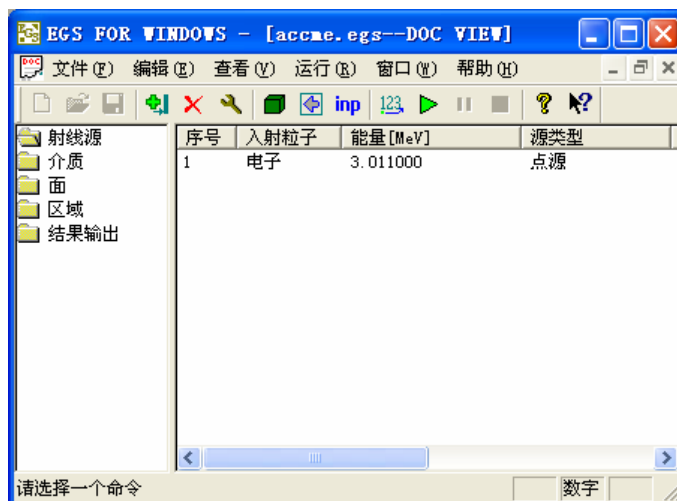


Fig.2 Main program interface



Fig.4 Program running interface

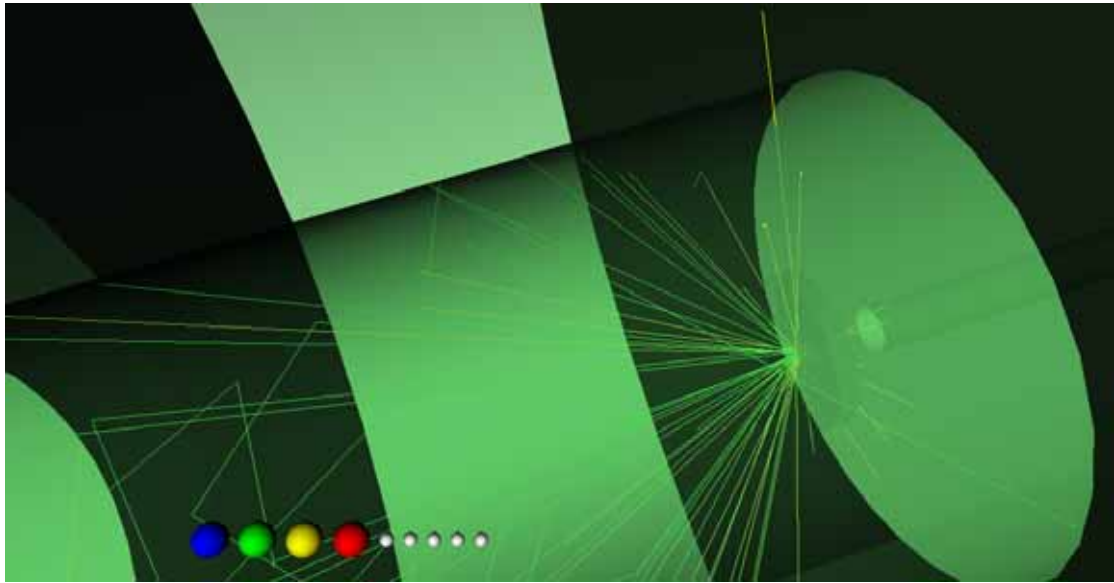


Fig.5 Particle tracks