MCFANG – A Monte Carlo Forward Adjoint Neutron Gamma code

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ABSTRACT

Evolution of Monte Carlo methods over the last four decades has focused on increased accuracy (through refinements in nuclear data) and efficiency (through development of variance reduction techniques). However, there are many practical problems where the modern abundance of fast computing power removes some of the need for elaborate acceleration techniques.

The computer program MCFANG is a simplified derivative of the powerful, general purpose Monte Carlo code MCBEND. It is intended for situations where human resources are at a premium but computing power is cheap. Nuclear data is represented in multigroup form (neutron, gamma or coupled) which allows the solution of forward or adjoint cases. Some simple and robust variance reduction methods are retained for cases that cannot be solved in analogue mode. The geometry modelling capabilities of MCBEND are retained. Simplicity of use is enhanced by the presence of a graphical user interface for data preparation. MCFANG is aimed at the user who is not an expert in the field of Monte Carlo methods.