



The dxtran transportation method is a mandatory sampling method that is presented and used in the Monte Carlo MCNP code to increase the probability of sampling in one place. In this article, we have fully discussed this topic

A very important point to consider is that dxtran is not a sequel in itself and can use its techniques to reduce errors in the sequel location

Table of Contents

?What is dxtran butter (1

?How does dxtran butter work (2

The problem of the dxtran cube method (3

Dxtran sphere problem solving method (4

How to use dxtran butter in MCNP (5

Video tutorial to reduce variance (6

?What is dxtran butter (1

Dxtran [1] is a deterministic transport method commonly used to increase sampling in a spherical region. This sphere is used if the probability of sampling in an area is low

?How does dxtran butter work (2

The dxtran method uses a sphere (dxtran sphere). The dxtran sphere works in such a way that it splits the particles in the center of the sphere into two parts

(The particle reaches the dxtran sphere before the next collision or escape (dxtra particle .1

The particle does not reach the dxtran sphere before the next collision or escape (nondxtran .2 (particle

The problem of the dxtran cube method (3)

One problem with the dxtran method is that it can cause a large weight fluctuation between the collision of particles before the sphere and the particles after passing through the sphere. The problem is that the nondxtran sphere disappears if it reaches the dxtran sphere in subsequent collisions.

Nondxtran particles tend to have much higher weights than desired inside the dxtran sphere, so removing nondxtran particles prevents high-weight particles from entering the dxtran sphere.

Dxtran sphere problem solving method (4)

New work shows that reducing this difficulty is possible by extending the concept of dxtran spheres to a set of nested dxtran spheres. Each dxtran sphere then protects its interior space against particles that weigh too much to make the weights fit better. Protection against large weights not only increases computational efficiency but also increases reliability. The effectiveness of this method was demonstrated in MCNP in a 1 km aviation problem and in a concrete canal problem.

How to use dxtran butter in MCNP (5)

.To use dxtran sphere in MCNP code must be written as

DXT: x1 y1 z1 ri1 ro1 x2 y2 z2 ri2 ro2 ... dwc1 dwc2 dpwt

<pl>

Particle type identifier

xi yi zi

Coordinates of the center of Korea No. i

rii

The inner radius of the sphere i

Note: The inner radius is used to reach 80% of the particles. The outer radius is where the .particles start

roi

External radius of Korea i

dwc1

(High weight cut [2] in Korea (default 0

dwc2

(Low weight cut [3] in Korea (default 0

dpwt

(Lowest photon weight. Used only for neutron particle mode. (Default is 0

Video tutorial to reduce variance (6

If you are looking to learn how to reduce variance in video form, learn the methods of reducing .variance and other advanced MCNP topics in video by referring to the link below

<https://partoyar.com/p/60>

Advanced MCNP course training in video

Deterministic TRANsport [1]

cutoff [2]

cutoff [3]