Particle swarm optimization algorithm with probabilistic restriction coefficient

Let ***z****i* = (*zi*1, *zi*2,…, *zin*) be random vector corresponding to each position ***x****i* of particle i. Every *j*th element *zij* of ***z****i* is randomized according to normal distribution with mean and variance .

Let,

Of course, we have:

Let,

The closer to global best position ***p****g* the local best position ***p****i* is, the more dynamic the position ***x****i* is, which aims to exploration for converging to global optimizer. The farer to global best position ***p****g* the local best position ***p****i* is, the less dynamic the position ***x****i* is, which aims to exploitation for fast convergence.