

| Name | Meaning | Value |
|------------|---|--|
| n | Number of principle components | 50 |
| N | Number of individuals | 420 at 120 km 200 at 60 km |
| a | Adaptive coefficient | Initial: 0.5 |
| ω | Inertia coefficient | 0.8 |
| $c1$ | Self-awareness to track the historically optimal position | 2.05 |
| $c2$ | Social awareness of the particle swarm to track the globally optimal position | 2.05 |
| Υ | Restraint factor to control the speed | 0.729 |
| θ | Velocity of individual | 0.5 |
| r | Local optimizing radius | $8 \times \delta$ /original dimensions |
| s | Step size of updating individual | 0.6 |
| p_a | Probability of individual escaping from current position | 0.3 |
| Total_Step | The number of iterations | 50 |