INPUT

- f: objective function
- m: number of particles with $x_i \in S$
- u_i: number of velocities with $u_i \in S$
- x_i: number of positions in Ω
- w: inertia
- $c1$,$c2$: constant numbers
- $r1$,$r2$: random numbers
- $iter$: iteration counter
- $iter_{max}$: max iterations
- p_i: vectors are best located values for every particle i

OUTPUT

-p_{best}

INITIALIZATION

- **Set** $iter \leftarrow 0$
- **Set** positions $x_i \in S, i = 1.....m$
- **Set** velocities $u_i, i = 1.....m$

-For each particle $i \in \{1..m\}$ **do**

-$p_i \leftarrow x_i$

-End for

-$p_{best} \leftarrow argmin_i f(x_i)$// global best

01 **while** $generation < Gmax$ **do**// termination check
02 **For** each $i \in \{1..m\}$ **do**
03 draw $r1, r2 \backsim U(0, 1)$
04 $u_i \leftarrow wu + c1r1(p_i - x_i) + c2r2(p_{best} - x_i)$// update velocity
05 $x_i \leftarrow x_i + u_i$// update position
06 **if** $f(x_i) < f(p_i)$**then**
07 $p_i \leftarrow x_i$
08 **End if**
09 **End for**
10 $p_{best} \leftarrow argmin_i f(x_i)$// Update global best
11 $iter \leftarrow iter + 1$
12 **End while**