

The MATLAB code consists of three .m files and a folder:

1. **Particleswarm\_GRFT.m**
2. **particleswarm.m**
3. **fun\_GRFT.m**
4. **private**

**Particleswarm\_GRFT.m** is the main file that includes essential parameters for the radar, target, and algorithm, as well as the Monte Carlo experiments and the visualization of solution distributions. It calls the function 'particleswarm' to execute the particle swarm optimization (PSO)-based algorithms.

**particleswarm.m** contains the PSO-based algorithm. On line 159, there are conditions based on the value of 'UserAlgorithm':

- If 'UserAlgorithm' equals 4, it uses the proposed BTPSO algorithm.
- If 'UserAlgorithm' equals 5, it employs the traditional BPSO algorithm.
- If 'UserAlgorithm' equals 0, it implements the traditional PSO algorithm.

On line 163, there is a check for the variable 'P':

- If 'P' is greater than 1, it utilizes the proposed termination condition C3.
- If 'P' equals 1, it uses the traditional termination condition C3.

**fun\_GRFT.m** is responsible for calculating the GRFT value for the position 'x'.

The **private** folder contains MATLAB's built-in codes and should be placed in the same directory as the other .m files.

It is important to note that the code is based on the framework of the PSO algorithm, and our work represents an improvement over that existing code.