1147-62-16   **Sharandeep Singh*** (`sssinghsharan@gmail.com`), Department of Mathematics, Punjabi University Patiala, Patiala, 147002, India. *Statistical analysis of particle swarm optimization algorithm.* Preliminary report.

In this Paper, I have done statistically analysis of nature inspired optimization technique (PSO) with new approach (MPSO) which I tested on three different type of classical functions. In statistical analysis,I used new technique with particle swarm optimization to get exploitation, exploration, accuracy and rate of convergence on classical functions .Experimental results showed that new technique better than Particle swarm optimization (PSO) in statistically analysis. The beauty of new approach is that It solved many problems to get exact value of functions where as old approach get approximation solution on the testing problems. This approach also tested on real life problem(Economic Dispatch Problems) for minimizing the fuel cost of power plants. Keywords: Standard Particle swarm optimization (SPSO), Statistical Analysis of Particle swarm optimization (MPSO), Gravitational search algorithm (GSA),Classical functions. (Received September 22, 2018)