Power transmission loss reduction

Tehzeeb-Ul-Hassan et al. (2012) propose a fully informed PSO for the reduction of losses in power transmission systems.

Questions

1. Explain the problem of power transmission loss optimization. Why is optimization important in this case? What other methods have been used? How did they fare?

2. Implement the method named (not fully informed) PSO by Tehzeeb-Ul-Hassan et al. (2012) and test it on an artificial example. How does it compare to other methods? Do you think that the FIPS can obtain better results? Motivate.

References

Tehzeeb-Ul-Hassan, H., Zafar, R., Mohsin, S. A., and a, O. L. (2012). Reduction in power transmission loss using fully informed particle swarm optimization. *Electrical Power and Energy Systems*, 43:364–368.