

# Improved colliding bodies

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Boucekara et al. (2016) propose an improved “colliding bodies” optimization algorithm.

## Questions

1. Explain at least three population based methods. For what problems have these been used? Describe at least three real-world problems and explain the obtained results. Based on these, what are the advantages and shortcomings of these methods? What other methods can be used for the problems you described? Why?
2. Implement the classic colliding bodies algorithm and the one proposed by Boucekara et al. (2016). Compare them on at least two numerical problems. Explain the results. What are the advantages and shortcomings of the methods based on the obtained results? Is the improvement necessary?

## References

Boucekara, H. R. E. H., Chaiba, A. E., Abidoc, M. A., and El-Sehiemy, R. (2016). Optimal power flow using an improved colliding bodies optimization algorithm. *Applied Soft Computing*, 42:119–131.