



## **The Downhill Simplex Particle Swarm Optimization in Reservoir Optimal Operation: a Case Study of Goupitan Reservoir**

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In reservoir optimal operation, the standard particle swarm optimization did not performed very well. This was owing to its weakness in holding diversity and reaching global optimum. To cope with this weakness, we drawn downhill simplex method into the standard particle swarm optimization. After illustrated the core mind, the solve loop, and the test situation of this improved method, this paper showed the reservoir optimal operation model and how this improved method worked out. It proved that this improved method has much more accuracy, reliability, and economy by the case study of Goupitan reservoir optimal operation. Although this improved method had been proved its effective just in single reservoir optimal operation, but it still has reference value for cascade reservoir optimal operation.