16IC157 Design and Implementation of a Hybrid MPPT technique based on the Scan of the Power vs Voltage input characteristic of the inverter

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The adoption of a Hybrid MPPT (HMPPT) technique is mandatory in PV applications operating under mismatching conditions. It is called Hybrid because it is neither only Distributed (on the PV modules) nor only Centralized (on the inverter). In this paper it will be shown how to properly optimize an HMPPT technique based on the periodic scan of the Power vs. Voltage characteristic at the input of the inverter in order to locate the optimal operating value, from the energetic efficiency point of view, of the bulk inverter voltage. Therefore, numerical simulations and experimental measurements on a reduced scale laboratory prototype will be carried out to confirm the validity of the theoretical predictions.

16IC167 A smart current control of a measurement station for superconducting cable test

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An optimized smart current controller for enhancing the measurement bandwidth and the test condition setting of a superconducting cable measurement test station is proposed. The controller is based on Adaptive Neuro Fuzzy Inference System logic, optimized by Particle Swarm Intelligence. The system effectiveness was proved through several simulations and is going to be demonstrated experimentally in the Facility for the Research on Superconducting Cables at the European Organization for Nuclear Research (CERN).
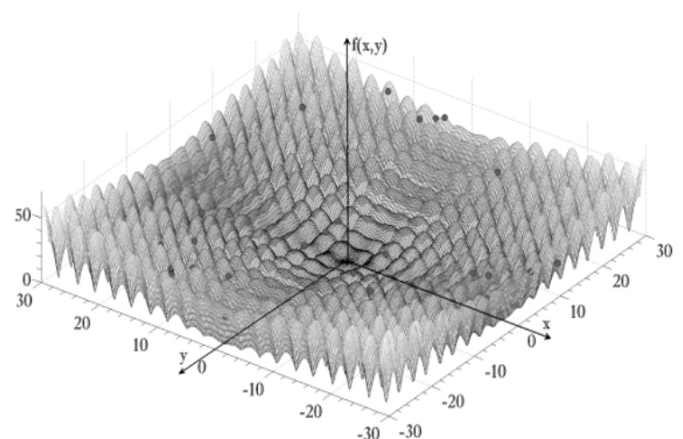
The particle swarm moving in the domain toward the optimal position.