Maximum Power Point Tracking under Uniform and Non-uniform condition- Partially Shaded Condition

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Nowadays, focus on renewable energy is rapidly growing and undoubtedly, solar energy plays an important role towards achieving long lasting, sustainable, environment friendly renewable energy resource to fulfill the energy needs for mankind. To convert solar energy to electricity, PV modules have been developed. But nonlinear characteristics of PV arrays and their dependency on irradiation level and temperature makes some difficulties to extract maximum power from them. These challenges become more complex when partial shading conditions are considered for PV arrays.]. In these conditions, single-diode model of a PV module is affected by PSC, the series resistance increases and the shunt resistance decreases. This fact leads to the change of I-V characteristic. In recent years, several MPPT methods have been introduced to find maximum power point under uniform conditions. However, conventional MPPT methods like P&O, InC, and Hill climbing algorithms fail to track MPP under PSC. therefore, finding a new methods for GP tracking is one of the most important issues around the solar energy.