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(57) Abstract :

A foldable roof-mounted solar charging apparatus (100) for electric vehicles comprises a base plate (101), multiple hinged solar panels (102), a microcontroller (103), and an actuator (104) for deployment. Telescopic arms (105), MPPT unit (107), and DC-DC converter (108) optimize solar power transfer to the battery management system (109). A light sensor (106) enables automated function, and a manual switch (110) provides user override. The system enhances charging autonomy and solar efficiency during vehicle idle time.

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