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(57) Abstract :

A low-cost photoelectric effect simulator (100) includes an LED array (102), a photoemissive plate (103), a photodetector (104), a microcontroller interface (105), and a threshold frequency emulator (107). It allows adjustable light frequency and simulates metal work functions for educational demonstrations. The system offers real-time visual feedback and safe operation, enabling cost-effective, interactive learning of quantum photoelectric phenomena. This invention promotes physics education accessibility through modular, programmable components integrated into a portable and affordable housing (101).

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