

# Physical science

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Operation of Circuit Breaker The turning on of portable heater in the room and subsequent opening of the room's circuit breaker and the going off of the lights could be attributed to the high current passing through the heater or low resistance of the metal strip in the circuit breaker. To understand these postulations, it would be critical to understand the operation of circuit breakers which has been described by El-Sharkawi (31) as a switch which would automatically open when exposed to high current. The high current would cause a metal strip in the circuit to warm up and bend away from the circuit connection causing a break in the circuit. This situation could be reversed and normal operation restored after diagnosing the problem.

In this context, the portable room heater needs to have high resistance so as to be effective in emission of heat. As such, a high current would be required for this function. The high current demanded by the heater would cause a high flow of current in the electric connection in the room. The circuit breaker exposed to the high current would cause the metal strip in it to warm up and bend away, breaking the circuit connection in the room, breaking normal electric supply which causes the lights to go off.

Similarly, the metal strip in the circuit breaker could be of too low resistance. As such, it fails to contain the flow of current required for normal operation of the room heater. As such, any slight rise in the current above what sustains lighting of the bulbs in the room would exceed its resistance threshold, warming up the metal strip causing it to bend away from the circuit and breaking the electric connection and the lights go off.

Work Cited

El-Sharkawi, M. A. Electric Energy: An Introduction. 3rd ed. Boca Raton:  
Taylor & Francis Group LLC, 2012.