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(54) **SYSTEMS AND METHODS FOR PROVIDING INTERACTIVE MODULAR LIGHTING**

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(57) **ABSTRACT**

Systems and methods for an interactive modular lighting system are described. The lighting systems enable users to dynamically build a luminaire through a modular joining of individual light-emitting units, however such that risk of electrical failure is automatically prevented through a dynamic computation of electrical circuit properties and dynamic configuration of components. Additionally, lighting systems with granular and configurable touch sensing are described, wherein a user's interaction with the lighting system can be coupled to actuation of properties of the lighting system or of properties of other devices in communication with the lighting system. Illustrative embodiments of applications of said lighting systems in smart home and gaming are provided.