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(54) **TEMPORAL KERNEL DEVICES, TEMPORAL KERNEL COMPUTING SYSTEMS, AND METHODS OF THEIR OPERATION**

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(57) **ABSTRACT**

The present disclosure relates to a temporal kernel device including at least one temporal kernel cell structure, wherein each of the temporal kernel cell structure including a non-volatile memristor; and a resistor and a capacitor connected in parallel to each other, and the resistor and the capacitor connected in parallel are connected in series to the nonvolatile memristor.