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(54) **SYSTEMS AND METHODS FOR A QUANTUM PROXY SERVER HANDOVER MECHANISM**

(71) Applicant: **Verizon Patent and Licensing Inc.**, Basking Ridge, NJ (US)

(72) Inventors: **Mun Wei Low**, Irving, TX (US); **Manuel Enrique Caceres**, Basking Ridge, NJ (US); **Lee E. Sattler**, Mount Airy, MD (US); **Connie P. Grigg**, Jacksonville, FL (US)

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(57) **ABSTRACT**

A device may include a processor configured to obtain a quantum key generated using quantum random numbers received from a quantum random number generator. The processor may be further configured to obtain a digital signature for a uniform resource locator (URL) associated with the obtained quantum key, wherein the digital signature is received from a security device configured to provide the quantum key to a user equipment (UE) device; receive a request from an application server to function as a proxy for a secure session with the UE device; authenticate the secure session with the UE device using the quantum key and the digital signature; and proxy the secure session between the UE device and the application server.