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## Quantum Metamaterials: The past, current and future perspective on quantum communication and information science.

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Metamaterials are artificial engineered periodic structures with exceptional optical properties that are not found in conventional materials. As a result of the material unique optical properties, new ways of controlling and manipulating light at the nanoscale is now possible. Thus, leading to many applications most particularly to quantum communication and information processing. Other notable applications where quantum metamaterials have been used include sensing and metrology, energy harvesting, electromagnetic cloak and super-resolution imaging. Quantum metamaterials have been used in addition with other nano-photonics devices to enable on-chip photonic circuitry, quantum reconfigurable devices and to perform quantum state engineering task. Using metamaterial at the quantum scale is still relatively new and research in this direction is rapidly growing. This study briefly reviews the current and future state of quantum metamaterials with applications to quantum communication and information processing.

**Apply to be considered for a student award (Yes / No)?**

No

**Level for award (Hons, MSc, PhD, N/A)?**

N/A

**Primary author:** Dr URIRI, Solomon (Center for Quantum technology, University of KwaZulu-Natal)

**Co-authors:** Prof. PETRUCCIONE, Francesco (Center for Quantum technology, University of KwaZulu-Natal); Dr ISMAIL, Yaseera (Center for Quantum technology, University of KwaZulu-Natal)

**Presenter:** Dr URIRI, Solomon (Center for Quantum technology, University of KwaZulu-Natal)

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