

Quantum information theory with black boxes

ANTONIO ACÍN¹

¹*ICFO-The Institute of Photonic Sciences, Barcelona, Spain*

ABSTRACT

Device-independent quantum information processing represents a new framework for quantum information applications in which devices are just seen as quantum black boxes processing classical information. This level of abstraction makes device-independent protocols especially relevant for cryptographic applications, as existing quantum hacking attacks become impossible. After introducing the key ideas and concepts needed for the definition of the device-independent scenario, we review the main results and open questions and discuss how this new approach also sheds light on fundamental questions in quantum physics.