

# **The Physics of Quantum Cryptography**

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It is no secret that quantum mechanics has been a wildly successful theory, providing an explanation for many results that had been unexplained leading up to its discovery. Since then, quantum mechanics has led to the implementation of various useful devices including the laser and the transistor. More recently, quantum mechanics has been associated with the development of quantum computers. With claims of “quantum supremacy” having been achieved, quantum cryptography has become an increasingly popular topic of discussion amongst students leaving their classical mechanics homework until the last minute. Finding itself within the intersection of math, computer science, and physics, quantum cryptography is often mentioned as an aside in undergraduate courses, without students learning how it actually works. While doing research on quantum cryptography in the context of a math course, I was awestruck by the elegance imbued into cryptographic systems by quantum mechanics. As such, this presentation will attempt to provide a glimpse into the beauty of quantum cryptography from a physicist's perspective.