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**Key Encryption Through Quantum Optics.** MADISON DURRANCE, ZACHARY GALBERD, ABBEY SAVAGE, TRISTAN CABRERA, HAUKE BUSCH, Georgia College — Cryptography has been around since the dawn of human civilization to send private messages for commercial, military, and political purposes. Some of the most important ciphers are the Vigenère cipher, the enigma, and the more modern RSA. Because of the development of the internet, private encryption has also become increasingly more important. The weakest link of encryption is the key creation and key distribution. A key is needed to encrypt and decipher codes and is needed by both the user and sender. A solution to this problem is the generation of quantum key distributions. In our experiment, we are now trying to send and receive coded messages through photons after we build our quantum key distribution apparatus. The device will be secured against any form of eavesdropping because of the Heisenberg uncertainty principle. We will be able to know immediately if someone is listening in and if our key is compromised.

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