MASTER THESIS: AUTOMATIC BIAS CONTROL FOR OPTICAL IQ MODULATION IN QUANTUM COMMUNICATIONS

For our Advanced Technology team in Munich/Martinsried, we are looking for a motivated master thesis student at the intersection of optical (quantum) communications, electrical engineering, and cyber security. With the advancement of the continuous variable QKD (CV-QKD), information can be encoded on the quadratures of the incident electromagnetic field, like in commercial optical communication systems. This allows the information on coherent states of light to be captured at the receiver. Similar to coherent optical communications, Inphase & Quadrature (IQ) modulation is a crucial step for the generation of the QKD transmit signal. For this step the modulator, usually a Mach-Zehnder modulator (MZM), imprints the electrical baseband DAC output onto the continuous wave laser light.

Throughout this thesis work, the student’s main task will be to implement a practical IQ modulator for QKD applications.

Knowledge, skills and experience required

- Bachelor’s degree in Electrical Engineering, Physics or other related area
- Knowledge in communication technologies and possibly optical transmission systems (WDM, QPSK, QAM)
- Good programming skills (MATLAB, Python, or similar)
- Proficiency in C programming and experience with Microcontroller units are a plus
- Good presentation and communication skills
- Innovative, highly motivated personality.

Contact

Feel free to contact Utku Akin under utku.akin@advasecurity.com or Dr. Tobias Fehenberger under tobias.fehenberger@advasecurity.com if you are interested.

About us

Adva Network Security has built a fierce reputation for protecting packet optical networks. We pioneered low-latency, multi-layer encryption solutions that are right now safeguarding data in motion for many mission-critical applications. Our ConnectGuard™ security technology is even combating tomorrow's quantum security threats. Built by the industry's leading security experts, our German-based organization helps organizations and government agencies security-harden their networks to ensure critical infrastructure is protected against cyber threats. Our development and manufacturing processes, as well as our security solutions, have been approved and certified by
leading governmental security agencies. For more information on how we can help you, please visit www.advasecurity.com.