

C2C Projects



Monitor placement problem for quantum network tomography

Student: Matheus Guedes de Andrade

CQN Faculty Advisor: Don Towsley

Ireland/NI Collaborator: Athira Raghunadhan / Indrakshi Dey /

Nicola Marchetti / Daniel Kilper

Conference Key Agreement with Integrated Green Machine

Student: Benjamin Fisher, Sequoia Ploeg and Gabe Richardson

CQN Faculty Advisor: Ryan Camacho

Ireland/NI Collaborator: Peter O'Brien

Efficient decoding algorithms for quantum LDPC codes

Student: Michele Pacenti, Dimitris Chytas

CQN Faculty Advisor: Bane Vasic

Ireland/NI Collaborator: Mark Flanagan, Dan Kilper, Mauro Paternostro

Noise protection in Quantum Networks

Student: Debayan Bandyopadhyay

CQN Faculty Advisor: Liang Jiang

Ireland/NI Collaborator: Mauro Paternostro, Liam Barry,

John Donegan, and Mark Flanagan

Quantum Internet Standards and Governance: Transatlantic privacy due diligence framework

Leads: Elif Kiesow Cortez & Robert Heverly





Student Exchanges



Matheus Guedes de Andrade
University of Massachusetts Amherst



Sequoia Ploeg
Brigham Young University



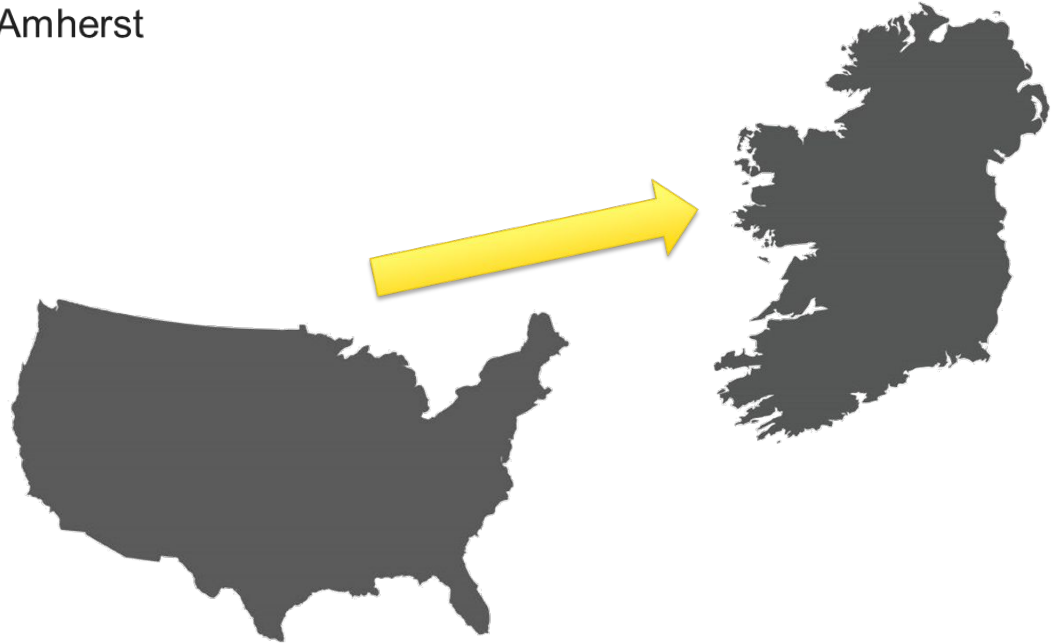
Gabe Richardson
University of Arizona



Debayan Bandyopadhyay
University of Chicago



Michele Pacenti
University of Arizona





Student Exchanges



Vivek Vasan
Trinity College Dublin



Sana Javed
University College Dublin



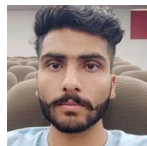
Conall Campbell
Queens Univ. Belfast



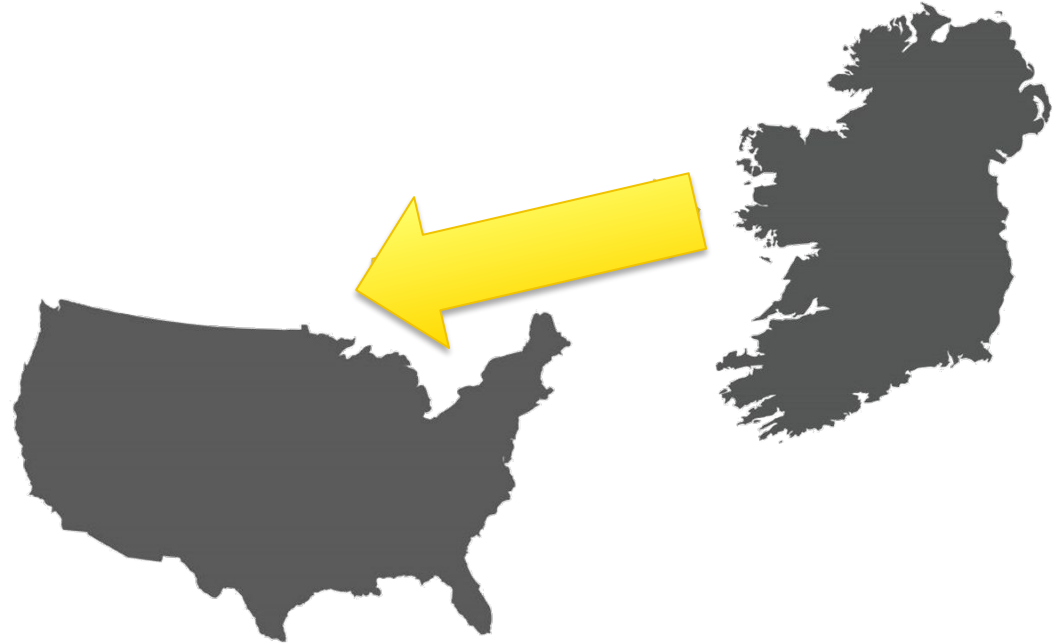
Athira Raghunda
Trinity College Dublin



Kavindu Sellaheewa
Southeast Technological Univ.



Vikash Kumar
Trinity College Dublin





Broader Impacts

Student Experiences

“I am truly happy to have had the opportunity to take part to this project; I feel enriched both academically and as a human.”

“Staying at CONNECT was a great opportunity considering the vast number of students working on quantum networks and the workshops that occurred in Dublin and Belfast throughout my stay.”

“Overall, I had a splendid time in Ireland—the country was beautiful and welcoming, and I learned a lot from the communications experts at Trinity College.”



BYU Undergrad
→ PhD TCD



Brandt Bashaw

PhD Student

✉ bashawb@tcd.ie



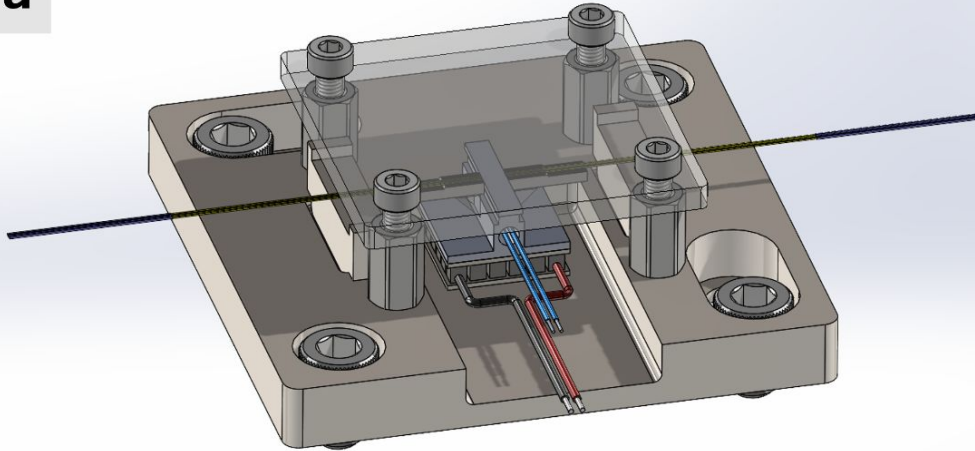
Collaboration



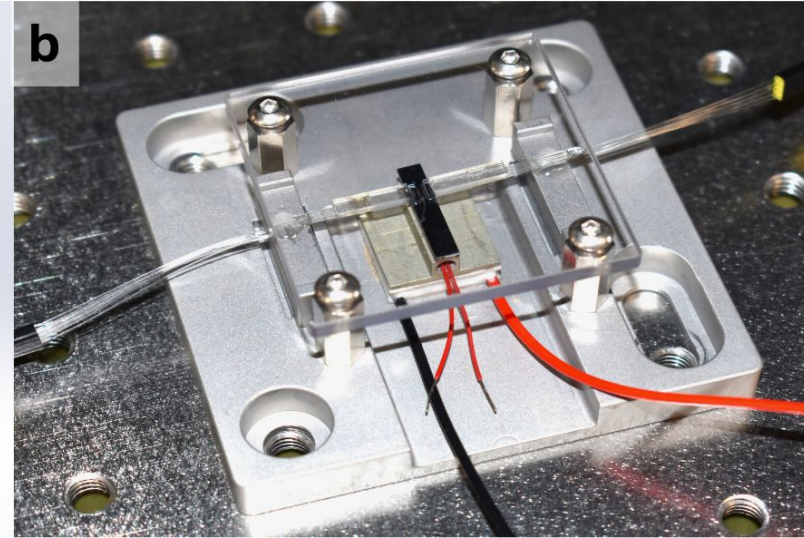
Integrated Photonic Green Machine



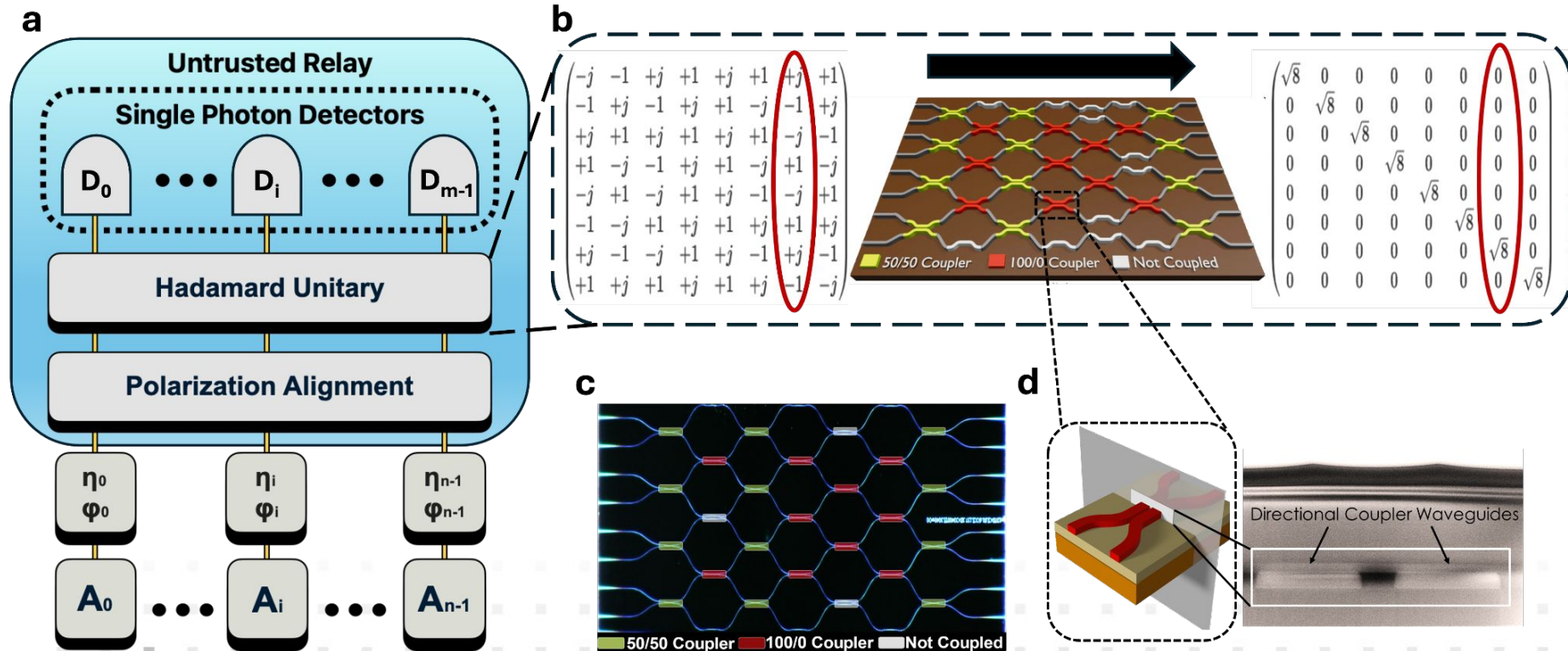
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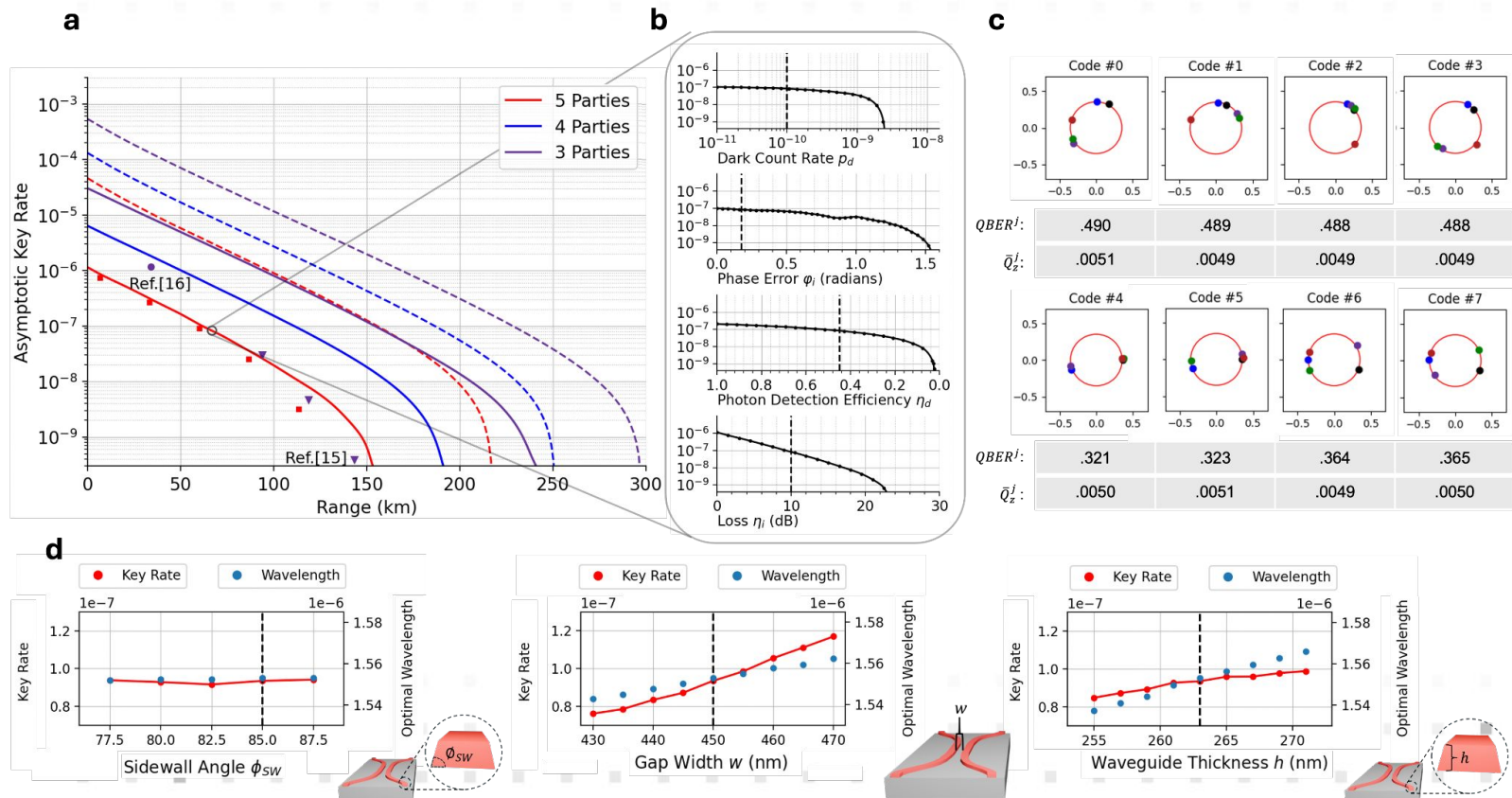
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Integrated Photonics Green Machine



Conference Key Agreement



Publications



D. Chytas, M. Pacenti, N. Raveendran, M. F. Flanagan and B. Vasić, "Enhanced Message-Passing Decoding of Degenerate Quantum Codes Utilizing Trapping Set Dynamics," in IEEE Communications Letters, vol. 28, no. 3, pp. 444-448, March 2024, doi:

10.1109/LCOMM.2024.3356312.

M. Pacenti, M. F. Flanagan, D. Chytas and B. Vasić, "Progressive-Proximity Bit-Flipping for Decoding Surface Codes," in IEEE Transactions on Communications, doi: 10.1109/TCOMM.2024.3454029.

S. Javed, F. Garcia-Herrero, B. Vasić and M. F. Flanagan, "Low-Complexity Linear Programming Based Decoding of Quantum LDPC Codes," ICC 2024 - IEEE International Conference on Communications, Denver, CO, USA, 2024, pp. 1782-1787, doi:

10.1109/ICC51166.2024.10622622.

R. Bali et al., "Routing and Spectrum Allocation in Broadband Degenerate EPR-Pair Distribution," ICC 2024 - IEEE International Conference on Communications, Denver, CO, USA, 2024, pp. 4954-4960, doi: 10.1109/ICC51166.2024.10622453.

R. Bali, et. al. "Routing and Spectrum Allocation in Broadband Quantum Entanglement Distribution"

arXiv 2404.08744

C. J. Campbell, et. al. "Entanglement distribution through separable states via a zero-added-loss photon multiplexing inspired protocol" Phys. Rev. Research 6, 03331

A. Raghunda, M. G. de Andrade, D. Towsley, D. Kilper, N. Marchetti, "Optimal Monitor Placement in Quantum Network Tomography" QCE 2024

R Maule, et. al. "Fair and Efficient Scheduling Strategies for Satellite Assisted QKD Systems" QCE 2024

K. Sellahawa, et al. "Airborne reflectors for satellite-based quantum entanglement and key distribution," Scientific Reports, 15, 36323 (2025). <https://doi.org/10.1038/s41598-025-20273-6>