**Week 19**

This week a lot of my focus was around finalising quench results ahead of a presenting to Strathclyde university Experimental Quantum Optics and Photonics group. The trip up to Strathclyde was both very useful and motivating. It was fascinating to see how the atom arrays we have been looking at for so long can actually be prepared experimentally!

Above I have attached my presentation slide which outline some of the recent local quench results. The main key ideas are:

* - Quenching from detuning equal to the nearest neighbour interaction strength results in confined quasiparticle propagation from the quench site through the chain.
* - This behaviour breaks down for quenches with detuning both above and below.
* - We use entanglement monotone concurrence the demonstrate that and entanglement pair is create at quench site and propagate throughout the system at finite velocity.
* - It is important to note that concurrence is very much a measure of exclusively pairwise entanglement. Two qubits could be entangled as part of a 3 qubit entanglement i.e GHZ state, but the concurrence would still be 0. PAIRWISE measurement. Atom 1 is entangled to atom 2 and 3 not just 2 by the measurement of concurrence.
* - Similar ideas are derive analytical by Calabrese on 1D ising chains whereby they introduce the idea that entanglement growth on the chain following the quench is a product of the highly excited prequench state acting as a source of pairs of entangled quasiparticle which propagate though the system.