Majorana zero modes are exotic quasiparticles that can emerge at the ends of one-dimensional topological superconductors and may be used in creating fault-tolerant qubits for quantum computation. In 2014, Yazdani and Bernevig theoretically proposed and experimentally created a new platform for realization of Majorana zero modes in chains of magnetic atoms on the surface of a superconductor. While their work and the work of others in the field provided strong evidence for the emergence of these quasiparticles, there was still a possibility that a trivial zero energy state can accidentally occur at the end of such chains. To rule out this possibility, and to provide a unique signature of Majoranas in this system, this past year the team turned their attention to spin-polarized measurements with the scanning tunneling microscope. They showed theoretically that such measurements can provide a clear way to distinguish a true Majorana zero mode from a trivial state. The high-resolution spin-polarized experiments carried on Fe chains confirmed the theoretical prediction, thereby providing the first unique signature of these excitations besides their zero energy peak in spectroscopy measurements.