

UCLA Department of Physics & Astronomy

# COLLOQUIUM

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## A Career in Astronomical Instrumentation

Ian McLean

UCLA



My career began with a degree in Physics and Astronomy from the University of Glasgow, Scotland in 1971. Although other paths were open to me, I was inspired by one of my astronomy instructors, David Clarke, who captured my imagination during my upper division years with his ideas about using modern (1970s!) technology to build better telescopes, new optical instruments, and improved astronomical detectors. I did not know for sure where this path would take me, but during my thesis work I soon learned that a novel instrument would yield new science. My first instrument (University of Glasgow 1971-1974), designed for a 24-inch (0.61-m) telescope, used two photomultiplier tubes for optical detection, and was capable of scanning the H-alpha and H-beta lines of relatively bright stars while measuring *sequentially* the linear or circular polarization and flux at each point in the scan. Compare this to MOSFIRE, the multi-object spectrograph for the 10-m Keck telescopes in Hawaii, which has a four megapixel wide-field near-infrared camera that can record *simultaneously* up to 46 medium-resolution spectra of very faint sources.

Delivered in 2012, MOSFIRE was led by the UCLA Infrared Lab, which I established here at UCLA in 1989 when Eric Becklin and I joined the faculty. In 2017, four and a half decades after my first degree, the American Astronomical Society honored me with the Joseph Weber Award for lifetime achievements in Astronomical Instrumentation. Many impactful technological breakthroughs occurred in the decades since 1971. Using descriptions of the instruments I have built and used over the years, I will illustrate how these events influenced the twists and turns of my career path and research experience.