Bulletin of the AAS • Vol. 54, Issue 1 (Obituaries, News & Commentaries, Community Reports)

Raymond P. Escoffier

(1940–2021)

Bert Hawkins¹, NRAO Central Development Lab (CDL) Team¹

¹National Radio Astronomy Observatory

Published on: Mar 01, 2022

License: [Creative Commons Attribution 4.0 International License \(CC-BY 4.0\)](https://creativecommons.org/licenses/by/4.0/)

**Ray Escoffier died on Sunday,
September 5, 2021 at age 80.**

Ray Escoffier, an exceptionally capable and accomplished engineer who designed and built the correlators for the first generation of NRAO's flagship interferometric arrays, enabling the extraordinary scientific production of the VLA, VLBA, and ALMA, passed away peacefully on September 5, 2021 in Baton Rouge, Louisiana.

A native of Louisiana, Ray came to NRAO in 1973 after earning Bachelor's and Master's degrees in electrical engineering from Louisiana State University and after a brief stint at Collins Radio in Dallas, Texas. Ray

joined the NRAO VLA correlator design team led by Art Shalloway, and in 1975 took on the role of lead engineer for the VLA correlator project and moved to New Mexico to oversee its installation. Commissioned in 1980, the VLA correlator represented groundbreaking technology for its time as one of the first all-digital correlators and for its use of custom integrated circuits. The correlator was well matched to the key science goals of the telescope, which included imaging the Doppler-shifted hydrogen emission from nearby galaxies, and resolving the fine-scale structure of powerful radio galaxies, quasars, and supernova remnants.

After the completion of VLA commissioning Ray returned to Charlottesville, and in 1986 he and his team of engineers and technicians at NRAO's Central Development Laboratory began working on the design of the original VLBA correlator. Under Ray's leadership, this correlator also had several groundbreaking features, including the use of thousands of application-specific integrated circuits (ASICs), an interface to twenty 128 MB/s digital recorders, and real-time software and firmware control for playback synchronization. Ray directed the construction of the correlator from Charlottesville with many trips to New Mexico and oversaw its integration with the tape drives in the then new Array Operation Center in New Mexico where it was commissioned in 1994.

Ray's final project at NRAO was his most ambitious and impressive: providing engineering leadership for an international team building a correlator for the Atacama Large Millimeter/submillimeter Array (ALMA) in the Atacama Desert of northern Chile. The ALMA correlator was designed to process the signals from 64 antennas with 16 GHz of bandwidth in two polarization channels. The final system resided in over 40 racks of equipment, processing signals from all of the ALMA antennas, translated into multiple intermediate frequency segments in the range of 2 to 4 GHz followed by 3-bit digitization, which at the time of the design, was a technically difficult goal to implement. Ray's design was once again at the leading edge of technology in radio astronomy in its use of ASICs and state-of-the-art Field Programmable Gate Arrays. Notably, when ALMA was commissioned in 2011, Ray's design worked nearly flawlessly, without a need for any design iteration—a testament to the engineering prowess he amassed over the years of designing and building the VLA and VLBA correlators. Ray also had the foresight to build in features to the ALMA correlator that made phasing the ALMA antennas to provide a single ALMA output for the Event Horizon Telescope considerably easier. This ALMA correlator is expected to continue to process signals from and produce invaluable science for several more years to come.

Ray retired from NRAO in 2005 and returned to his beloved state of Louisiana, with the goal of buying his first house after years of living in apartments as a peripatetic engineer working on radio astronomy projects around the world. As fate would have it, his return was complicated by the tragedy of Hurricane Katrina, which ravaged the state that same year. Undaunted, Ray persisted and settled in New Orleans where he spent the last 16 years of his life.

His years in New Orleans were some of the happiest of his life, and included vacationing with his brother and spending time with his nieces and in his garden. Over the years, Ray also made numerous humanitarian trips to Haiti with his church, bringing not only his faith and knowledge of Creole on these trips, but his engineering talent as well. According to Dr. Kurt Elward of the Haitian Health Care Ministry, Ray's engineering skills were critical in setting up a satellite connection for a computer lab in the Central Plateau of Haiti, enabling the education of agricultural workers in the impoverished region.

While Ray's professional life involved complex and complicated engineering projects — and often, frenetic international travel — his personal life was considerably different. He was a humble man, a homebody, a cat lover, and preferred a bicycle to a car to get to where he needed to be. Everyone who worked with Ray felt privileged by the

experience, at once impressed by his technical gifts as well as by his fundamental decency. The fact that he continued to send Mardi Gras King Cakes to his friends at the Central Development Laboratory every year after he retired says a lot about Ray, and helps explain the abiding esteem everyone in the Observatory feels for him.