High-Energy Physics at the Cosmotron and the Bevatron

At Michigan, I made the change from atomic physics to high-energy physics. I first worked in bubble chamber physics with Donald Glaser, the inventor of the bubble chamber. We carried out our bubble chamber experiments at the Cosmotron of the Brookhaven National Laboratory. But I wanted to be on my own. When the Russians flew SPUTNIK in 1957, I saw the opportunity and jointly with my colleague, Lawrence W. Jones, obtained research support from the Office of Naval Research. We began our own research program using first the now-forgotten luminescent chamber.[5] A luminescent chamber consists of one or more pieces of sodium iodide scintillator. We photographed and recorded the tracks of charged particles in the sodium iodide crystals using primitive electron tubes that intensified the light coming from the track. In 1960, at the Bevatron of the Lawrence Berkeley Laboratory, we carried out a somewhat primitive measurement of the elastic scattering of high-energy pions colliding with protons.[6]

But the newly invented optical spark chamber was a much better device for determining the paths of charged particles. Jones and I, using spark chambers, carried out at the Bevatron in the early 1960s, a definitive set of measurements on the elastic scattering of pions on protons.[7]

From the late 1960s to the early 1970s Michael Kreisler, Michael Longo, and I carried out some experiments on the high energy scattering of neutrons on protons[8] using optical spark chambers, one of them being a special thick-plate spark chamber where the scattered neutron was detected by its interaction in the thick plates. By this time I was at the Stanford Linear Accelerator Center.