

Abstract Submitted
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Toward the Standard Model: The Transformation of Particle Physics Experiments, 1964-1979 MICHAEL RIORDAN, University of California, Santa Cruz — During the 1970s, particle physics experienced a major transformation in the way experiments were performed. At the outset fixed-target experiments employing bubble chambers as detectors dominated, and a plethora of new mesons and baryons were discovered using this approach. By the late 1970s, bubble-chamber experiments were in deep decline. The dominant form of experimentation became the collider experiment, using a large electronic detector encompassing most of the solid angle surrounding the point of collision between two particle beams. Collider experiments soon began to involve hundreds of physicists and were especially well suited to examining phenomena at the level of leptons, quarks and gauge bosons — the fundamental elements of the emerging Standard Model of particle physics. I will discuss how this subtle but important transformation in particle physics occurred, focusing on three pivotal experiments involved in the discovery of quarks: the MIT-SLAC deep-inelastic electron-scattering experiment on the SLAC linac; the CERN-Columbia-Rochester proton-proton scattering experiment on the CERN ISR; and the SLAC-LBL electron-positron scattering experiment on the SPEAR collider.

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