Abstract for an Invited Paper
for the NWS06 Meeting of
The American Physical Society

The Role of Competition, Community, and Priority in the Discovery of the Tau Lepton

LEANDRA SWANNER, Oregon State University

In this paper, I examine the interactions between the scientific communities of Lawrence Berkeley National Laboratory (LBNL) and the Stanford Linear Accelerator Center (SLAC) in the discovery of the tau lepton by physicist Martin Perl between 1973-1977. Although the experiments responsible for the discovery of this new particle were part of a collaborative effort between SLAC and LBNL, Perl became known for his individual role in interpreting the data and was awarded the Nobel Prize in physics for his work in 1995. Drawing upon personal and professional papers from the SLAC Archives and History Office, the LBNL Archives and Records Office, and my discussions with the physicists involved in the discovery, I argue that the discovery of the tau lepton challenges many of the common generalizations regarding the practice of "Big Science." Big Science has often been associated with a transformation in the life of the experimenter as individual autonomy was subsumed by a 'factory' work style typified by teamwork on a massive scale. However, an examination of the discovery of the tau lepton reveals that physicists at SLAC worked in small research groups, enjoyed great scientific freedom, and maintained a direct and interactive role in shaping research. This study also illustrates how scientific ambition motivates decisions underlying priority and discovery, which is highlighted by Perl's rush to publicize his findings in order to establish priority.