A Tau-Charm Factory in the B Factory Era

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Tau-Charm Workshop

SLAC

March 9, 1999

Introduction

- What's happened since the Workshop at Argonne in 1995?
- There has been no disaster - No scientific or technical argument has arisen that rules out building a Tau-Charm Factory
- At the other extreme, the possibility of a breakthrough discovery at a Tau-Charm Factory remains, but we have not found a guarantee of such a physics result

The "Bad" News

- The B Factories are real - they will provide significant physics competition in several areas
- Physics marches on:

  - Better limits on rare or forbidden D decays, D - D mixing, charmed baryons, etc.

  - Better limits on rare or forbidden tau decays, analysis of hadronic final states, etc.

  - Measurements in the K and B systems on CP violation
- Even more tau and charm physics will be done at the B Factories in the future

The "Good" News

- The B Factories are real - machines with two rings, ampere currents, complicated interaction regions, . . . can be built successfully
- Some charm physics will not be done elsewhere, such as details of charmonium decays, the search for glueball candidates in radiative J/psi decays
- Physics marches on - Neutrinos oscillate, CP violation exists in decay amplitudes, etc. There is added impetus to understanding flavor changing processes in the lepton sector - the tau is least explored, but may have the biggest effects

The "Good" News (continued)

- New physics typically is associated with additional couplings that change flavors and new phases relative to those of the Standard Model (or at least a different weighting). Loops ==> both flavor changing neutral currents (FCNC) and CP-violating effects
- A Tau-Charm Factory could reach well beyond a B Factory in the search for D^o - D^o mixing and CP violation in the tau sector, and reach levels that are very interesting in some models of new physics

Conclusion

- Progress on the B Factories has made us more confident about building the accelerator (and the detector) for a Tau-Charm Factory
- Important discoveries and measurements are being made and some of what is done elsewhere in the world, especially at B Factories, will cover parts of the physics of a Tau-Charm Factory
- There will remain significant windows for a Tau-Charm Factory to explore, both "bread and butter" physics and CP violation and FCNC phenomena where a great discovery could most likely be made