# 1 Sharpening the physics case for charm physics at SuperB

## 1.1 Executive summary

F.M.Vidal

## 1.2 Theoretical Introduction

I.Bigi: about 2 pages.

## 1.3 Review of D Mixing at the Upsilon and at Threshold

D.Asner: comparison with other charm physics experiments (BES,CLEO, etc.), evaluation of possibilities at threshold vs Upsilon running: threshold will give a model independent way of determine the strong phase. Also time dependent CPV measurement can be done at threshold (sigma (t)   tau).

## 1.4 CPV

### 1.4.1 CPV in Mixing at the Upsilon and at Threshold

F.Martinez Vidal, A.Oyanguren: Semileptonic and adronc decays at threshold and Upsilon.

### 1.4.2 CPV in interference between mixing and decays

G.Simi: decays into CP egenstates

- contact BaBar authors: Chavez, Carlos A.; Coleman, Jonathon; Cowan, Ray; Flood, Kevin; Lockman, William; Petersen, Brian).
- Golden mode is D-¿KK ( can use D-¿pipi, Ksrho, while KsPhi can have 10% contribution from f0 resonance).
- This is to be done at Y4S.

### 1.4.3 CPV in decay

A.Palano[TBC]: double cabibbo suppressed decays.

### 1.4.4 T odd correlations

A.Palano: $D- > KK\pi\pi$ angular correlations.

## 1.5 Mixing and CPV in 3 body decays

N.Neri, G.Batignani: threshold vs Upsilon for Dalitz model systematics, feasibility of the model independent measurement.

- Need to understand how to keep under control the dalitz model systematic.
- CPV measurement can be competitive with D-¿KK.
- Systematic errors in this analysis are different from other analysis (like lietime ratio)
- take the current babar dalitz model, generate toy MC event, count number of events in the various bins, then estimate the sensitivity on strong phase