

WIFAI2023: CKM & CPV

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A story full of successes

1960's

CP violation in K decays

1970's

Discovery of J/ψ and charm quark

1980's

Inference on top quark mass
from B mixing

2000's

CP violation in B decays

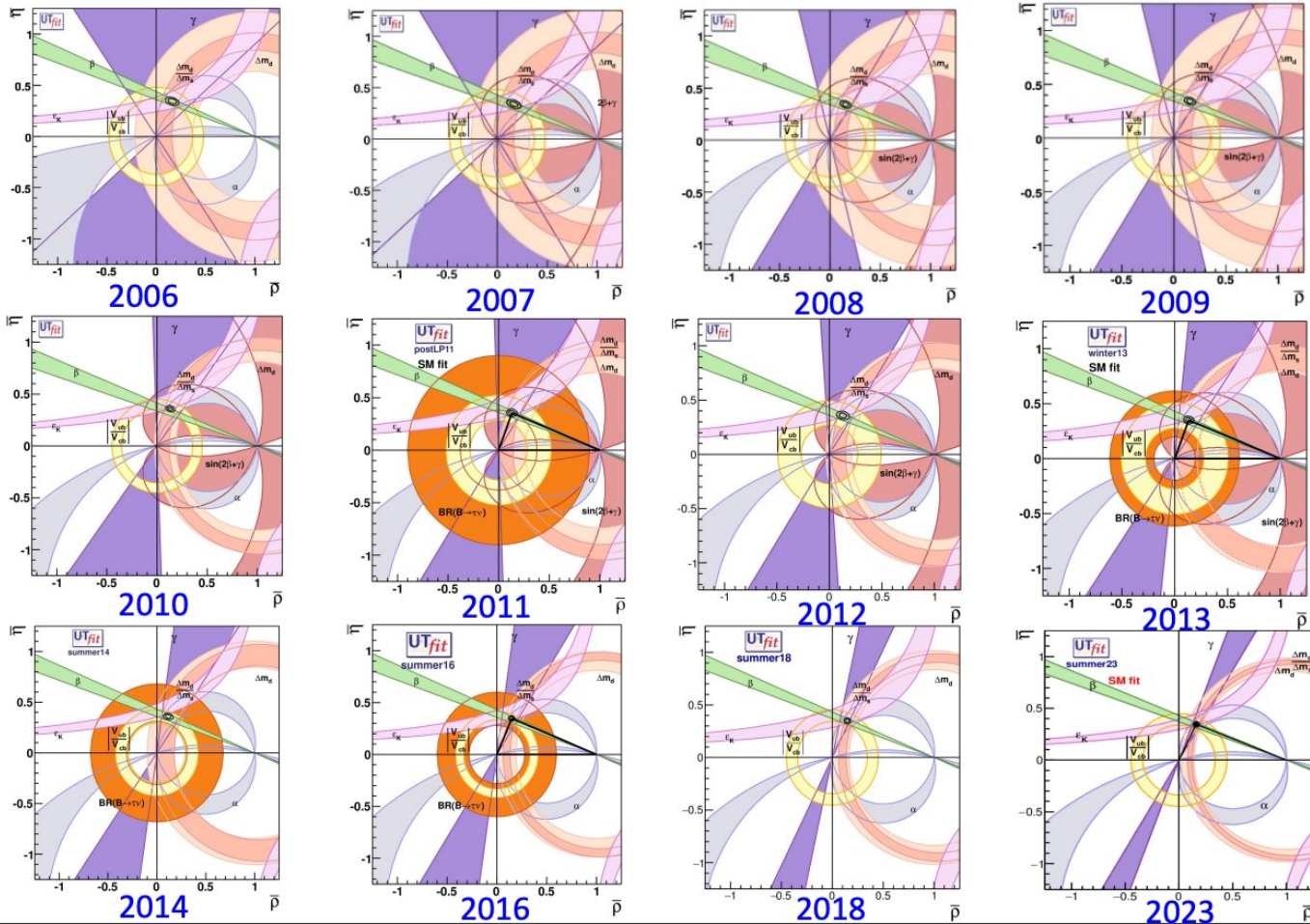
2020's

CP violation in D decays



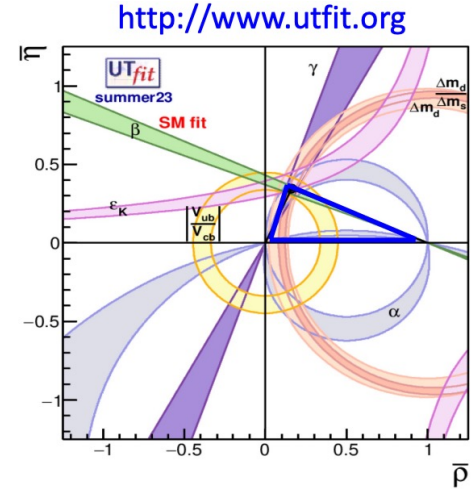
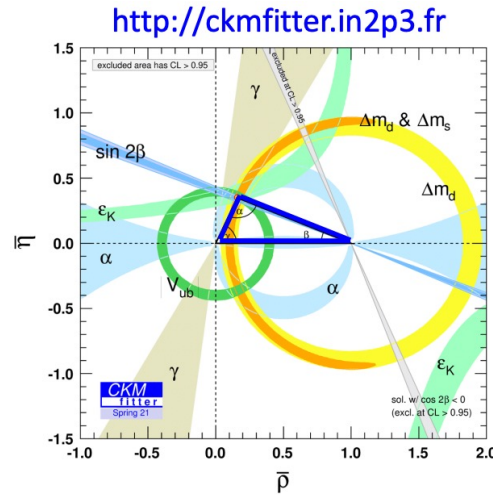
Cartoon presented by N. Cabibbo at the Berkeley conference in 1966

More modern story



Status of CKM & CPV measurements

- Few decades of CKM measurements provided an impressively consistent picture of CPV in the quark sector of the SM
 - Remarkable agreement within the current precisions of all measurements
 - Effects of BSM physics at the 10% level are still possible
 - Few places show puzzling tensions, but no definitive answer can be given with the current precision
- Chasing BSM physics in this sector will require to enter an era of extreme precision measurements and accurate theoretical interpretations



Purpose of this session

- Discuss the current status of CKM Matrix and CPV landscape
 - Latest measurements from running experiments
 - Interpretation of current measurements in terms of CKM parameters and/or Physics Beyond the Standard Model
- Have a look to the future
 - How theory can/will cope with the shrinking of experimental uncertainties
 - What theory can do to exploit less “clean” sectors (e.g. charmless hadronic decays, charm physics...)
 - What are the experimental challenges for the next generation of detectors
 - Limiting factors for measurements in the high-precision era
 - Not only technological challenges, but also person power and costs...
- Hope to have a fruitful discussion

A guidance for the discussion

- As conveners we prepared a document shared with speakers
 - Some suggestion for the speakers about the structure of the presentation
 - List of “What’s next” topics, open points and questions that would be nice to discuss during this workshop
- Everybody is encouraged to look at the document [here](#)
 - Pick up a topic of your choice to ask questions
 - Add missing topics that you think are worth to discuss and ask the corresponding question
- Participation and discussion today will be the base for a follow-up discussion about the workshop

Let's start with a good dream...

