

Search of new physics via electroweak penguin process in Belle and Belle II



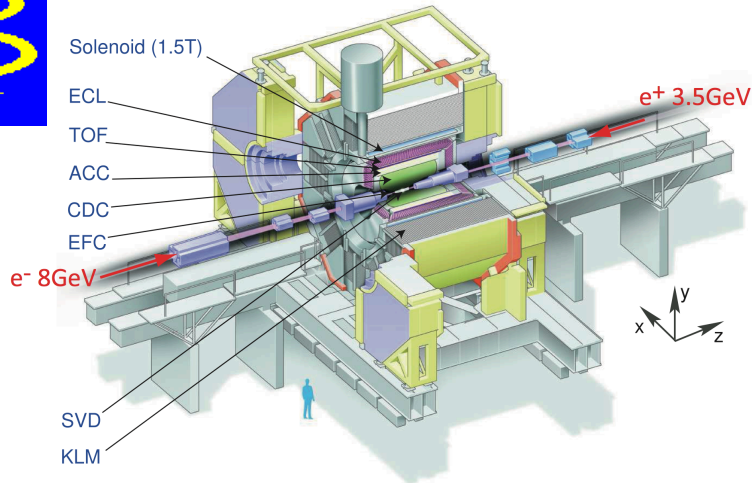
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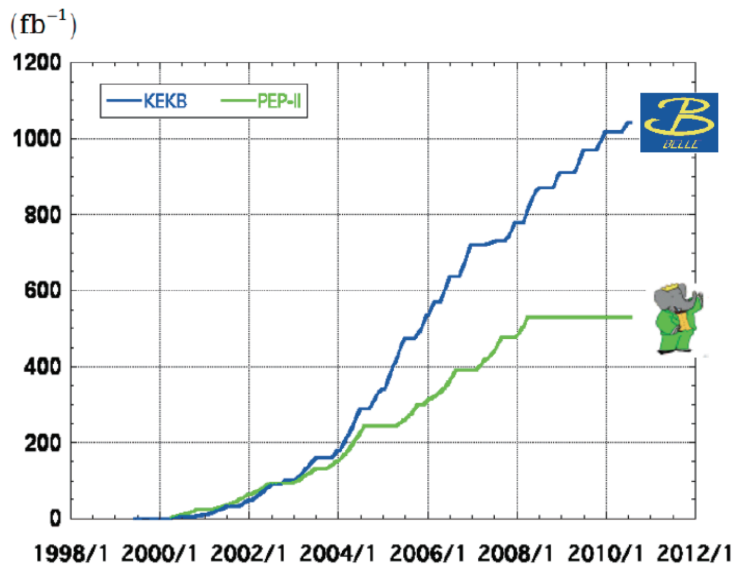
1. Introduction of Belle & Belle II
2. Sum of exclusive study of $B \rightarrow X_s \gamma$
3. LFV search of $B^+ \rightarrow K^+ \tau l$ ($l=e, \mu$)
4. Re-discovery of $B \rightarrow \rho \gamma$ (Motivation)

Introduction

Introduction of Belle



Integrated luminosity of B factories



> 1 ab⁻¹
On resonance:
 Y(5S): 121 fb⁻¹
 Y(4S): 711 fb⁻¹
 Y(3S): 3 fb⁻¹
 Y(2S): 25 fb⁻¹
 Y(1S): 6 fb⁻¹
Off reson./scan:
 ~ 100 fb⁻¹

~ 550 fb⁻¹
On resonance:
 Y(4S): 433 fb⁻¹
 Y(3S): 30 fb⁻¹
 Y(2S): 14 fb⁻¹
Off resonance:
 ~ 54 fb⁻¹

Belle experiments

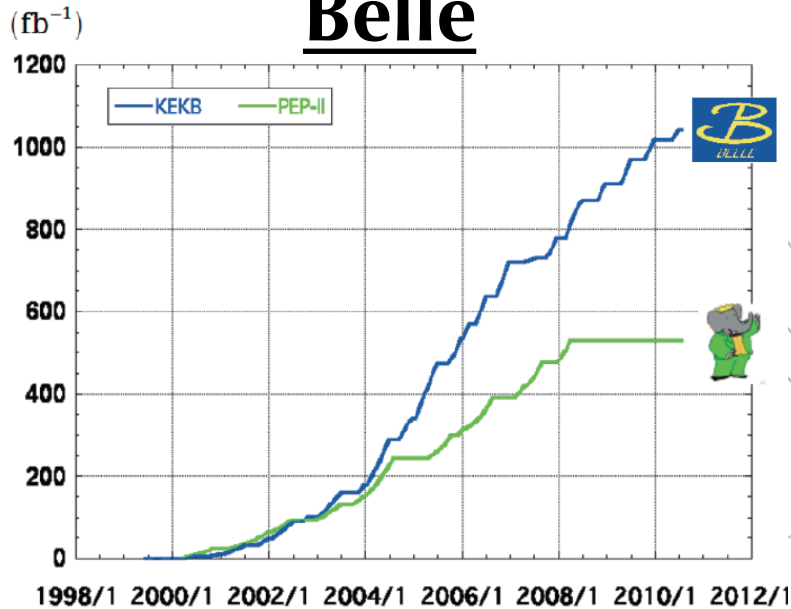
- Belle is designed to investigate flavor physics via a huge amount of B mesons.
- Discovery of **CP asymmetry of B**, determination of **CKM angles**.
- Not only B, but also D, τ , dark sector, etc.

Feature

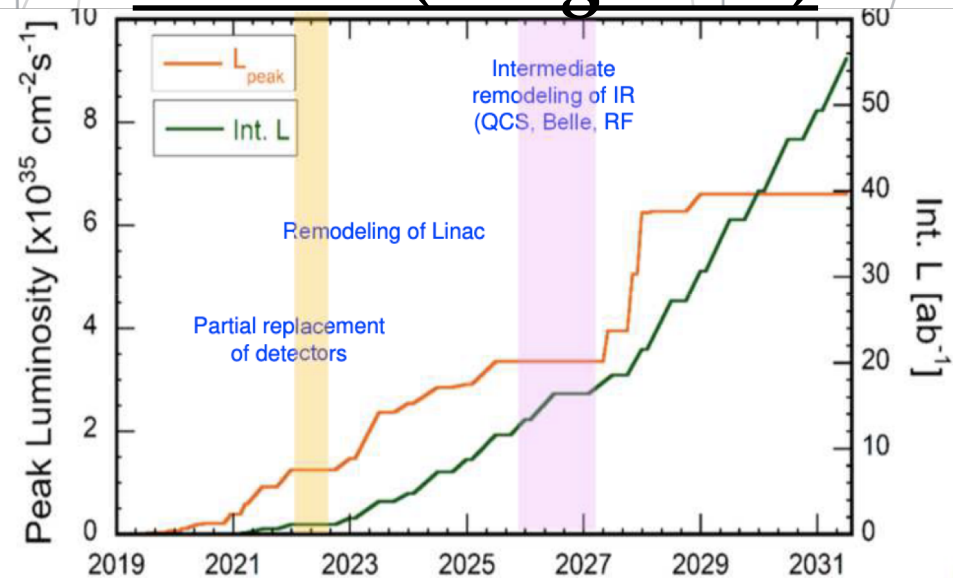
- Clean environment with small background.
- Quantum correlated BB pair from U(4S) decay.
- The world record holder of Luminosity!

Upgrade to Belle II

Belle



Belle II (Long-term)



- Several upgrades allow us to enhance luminosity 40 times greater:
 - **Beam current (x2)**
 - **β_y^* (1/20)**
- Detectors and DAQ are also upgraded to adjust higher radiation and required fast readout.
- In short-term strategy, we are aiming to collect **$>400\text{fb}^{-1}$** (nearly same with BaBar Y(4S) data) in 2021.