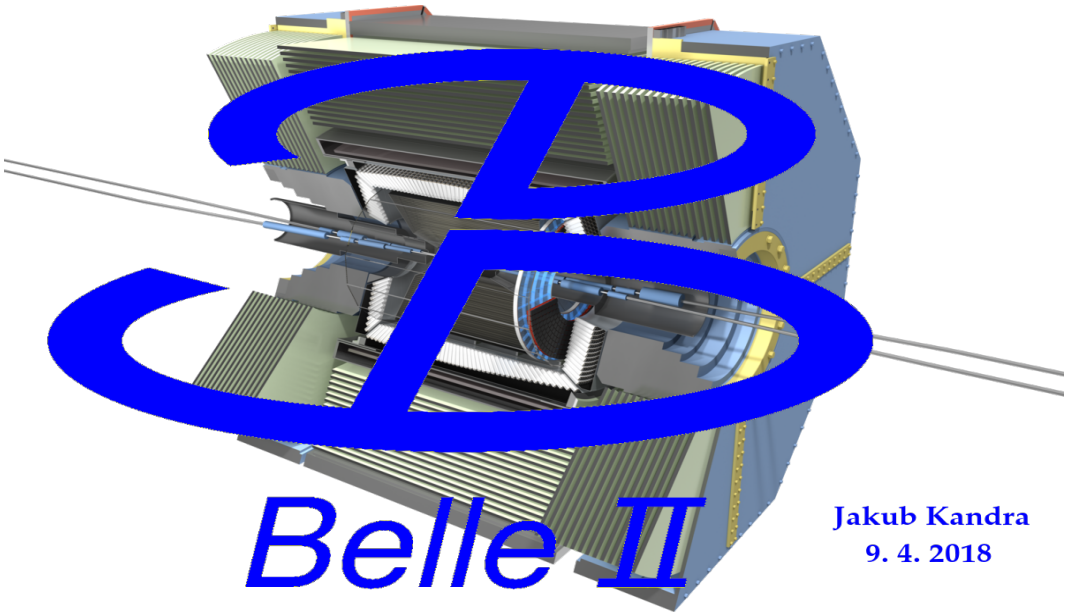
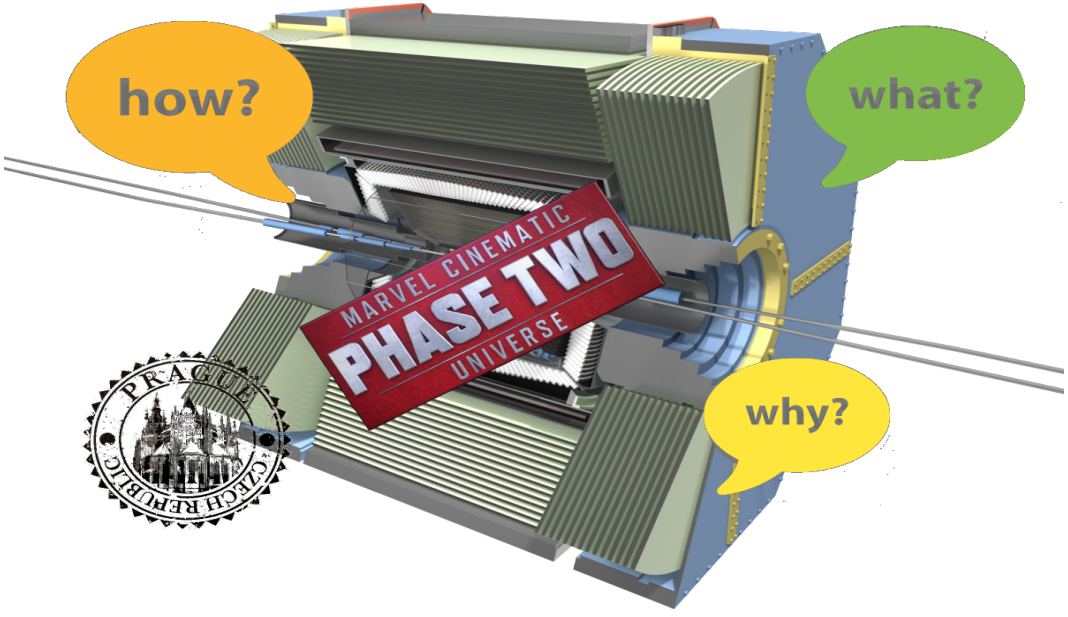
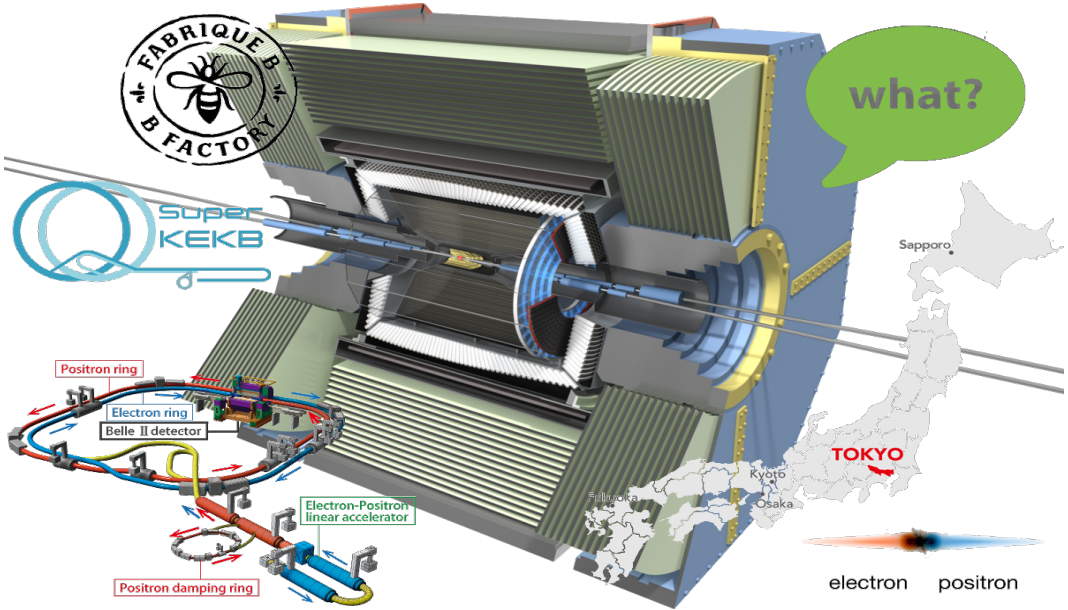


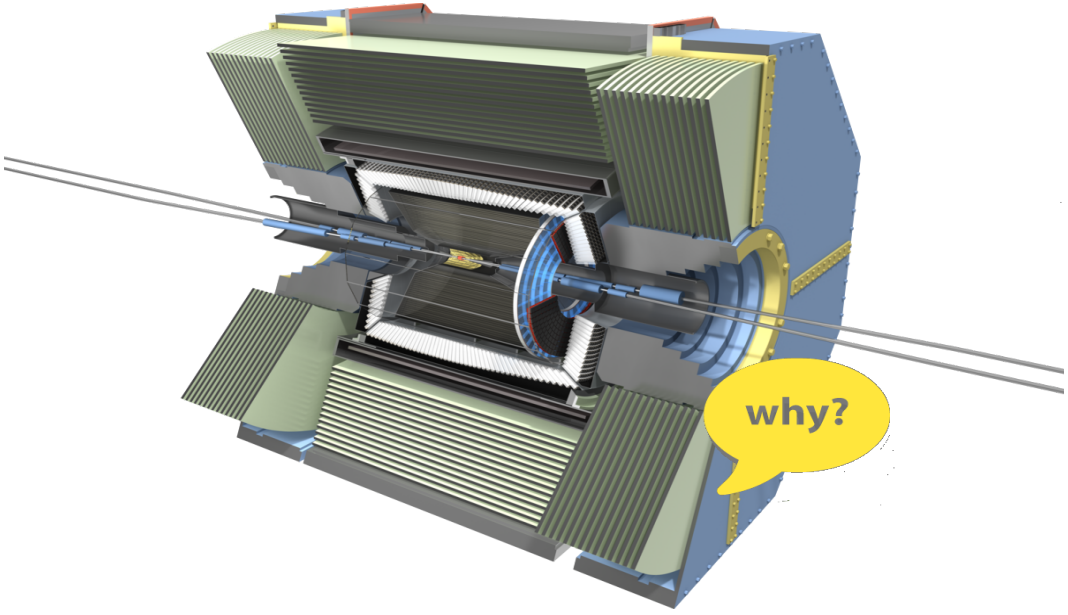
Belle II

Jakub Kandra

9. 4. 2018

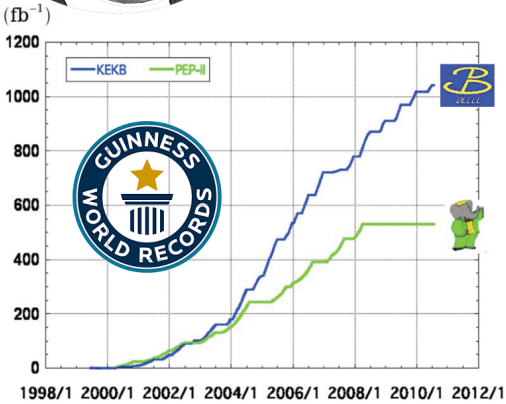

how?
what?
why?
MARVEL CINEMATIC
PHASE TWO
UNIVERSE
PRAGUE
CZECH REPUBLIC

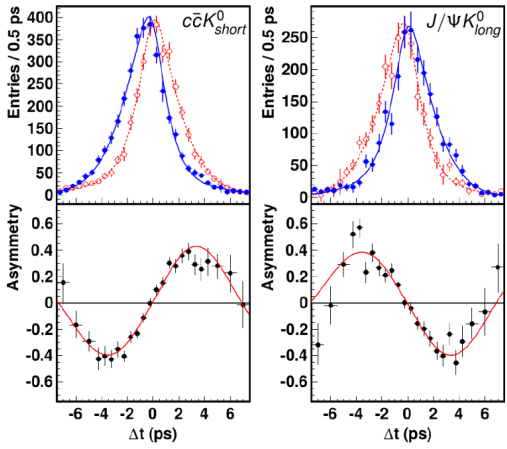

FABRIQUE PAR
B FACTORY
what?
Super
KEKB
Positron ring
Electron ring
Belle II detector
Electron-Positron
linear accelerator
Positron damping ring
Sapporo
TOKYO
Kyoto
Osaka
Fukuoka
electron
positron


why?

BELLE

BABAR


(fb^{-1})
KEKB
PEP-II
GUINNESS WORLD RECORDS
1200
1000
800
600
400
200
0
1998/1 2000/1 2002/1 2004/1 2006/1 2008/1 2010/1 2012/1

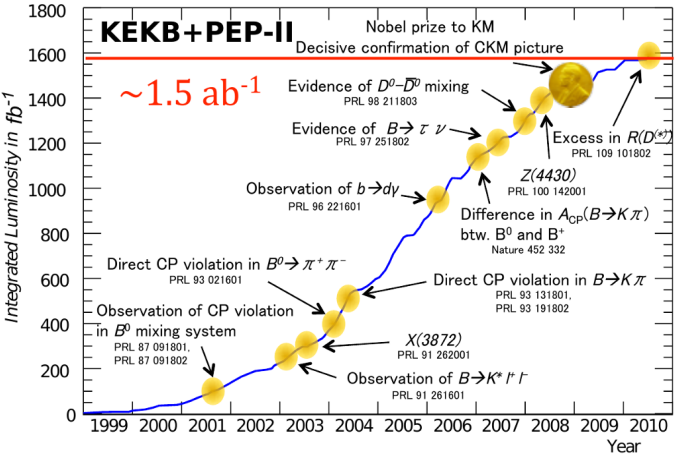

$c\bar{c}K^0_{short}$
$J/\Psi K^0_{long}$
Entries / 0.5 ps
Asymmetry
Δt (ps)

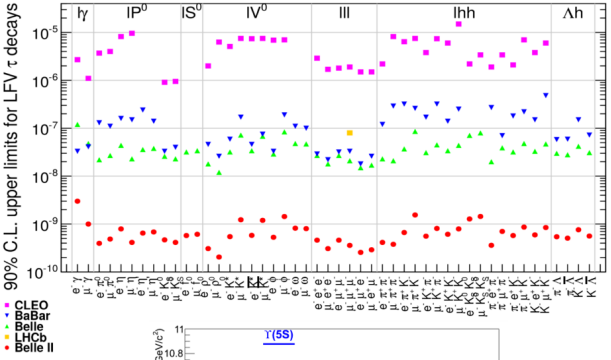


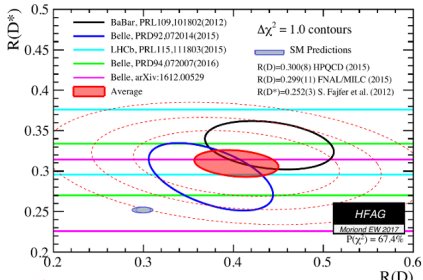



BELLE

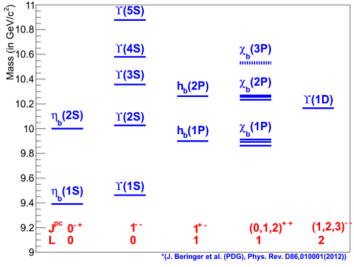
BABAR

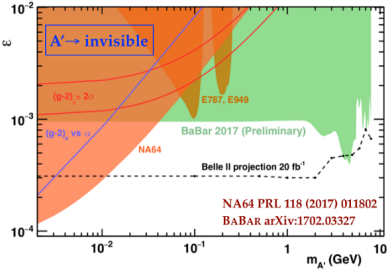

KEKB+PEP-II
Nobel prize to KM
Decisive confirmation of CKM picture
~1.5 ab-1
Evidence of D0–D̄0 mixing
PRL 98 211803
Evidence of B→ τ ν
PRL 97 251802
Excess in R(D(*))
PRL 109 101802
Z(4430)
PRL 100 142001
Observation of b→dγ
PRL 96 221601
Difference in ACP(B→Kπ)
btw. B0 and B+
Nature 452 332
Direct CP violation in B0→π+π−
PRL 93 021601
Direct CP violation in B→Kπ
PRL 93 131801,
PRL 93 191802
Observation of CP violation
in B0 mixing system
PRL 87 091801,
PRL 87 091802
X(3872)
PRL 91 262001
Observation of B→K* l+ l−
PRL 91 261601
Integrated Luminosity in fb-1
Year
1800
1600
1400
1200
1000
800
600
400
200
0
1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010

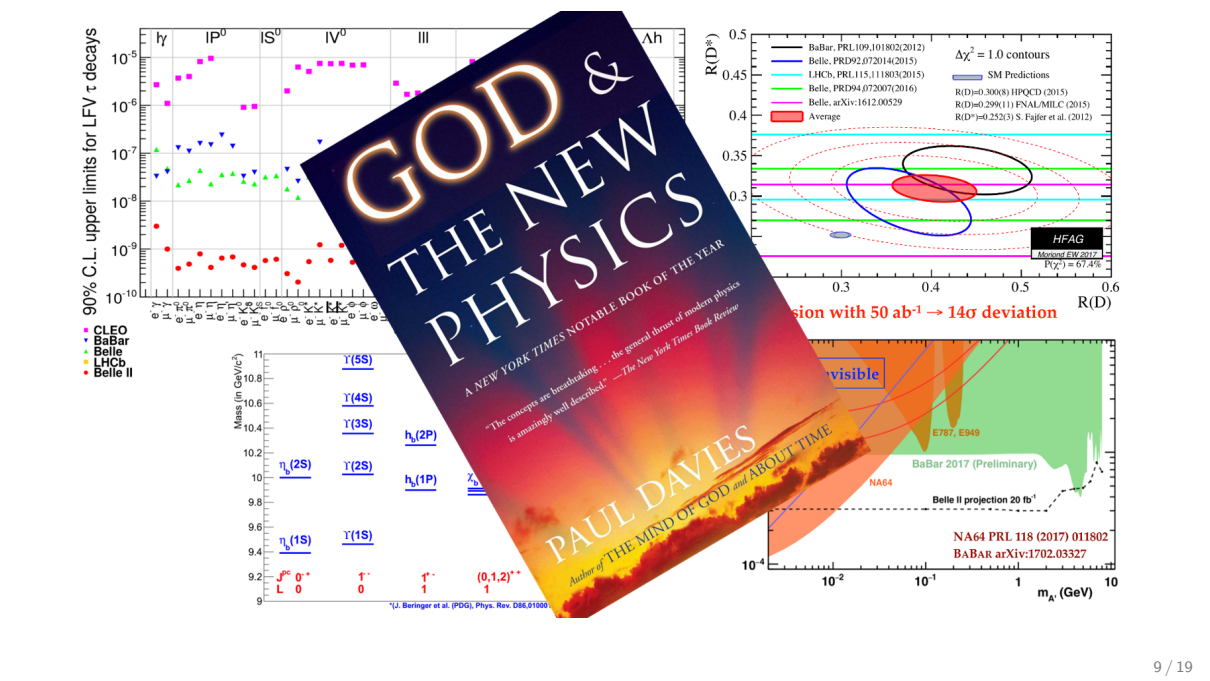




~2-3% precision with 50 ab^{-1} → 14σ deviation







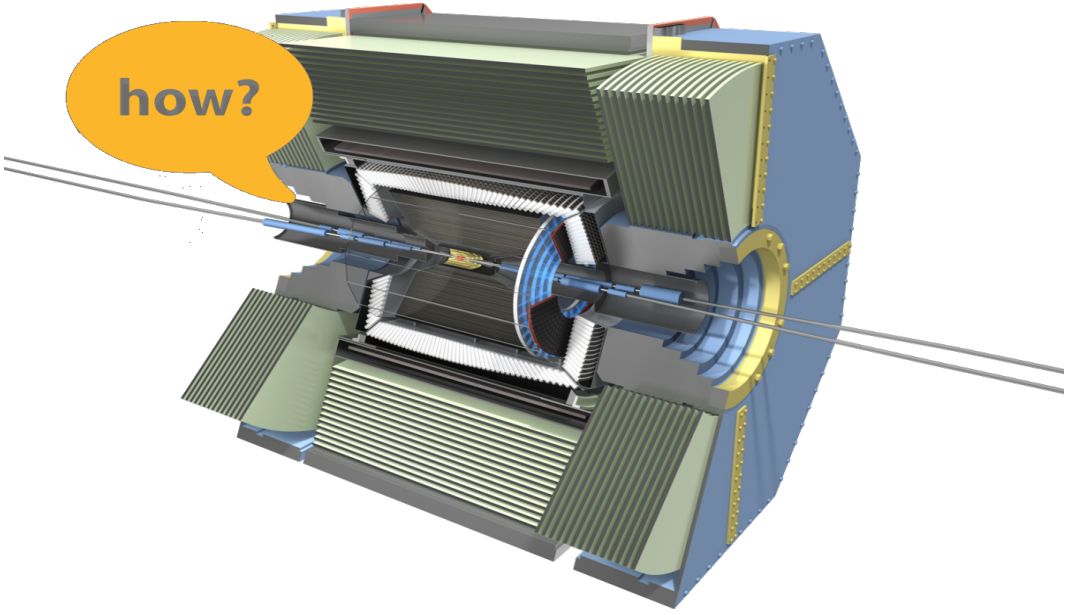
GOD & THE NEW PHYSICS

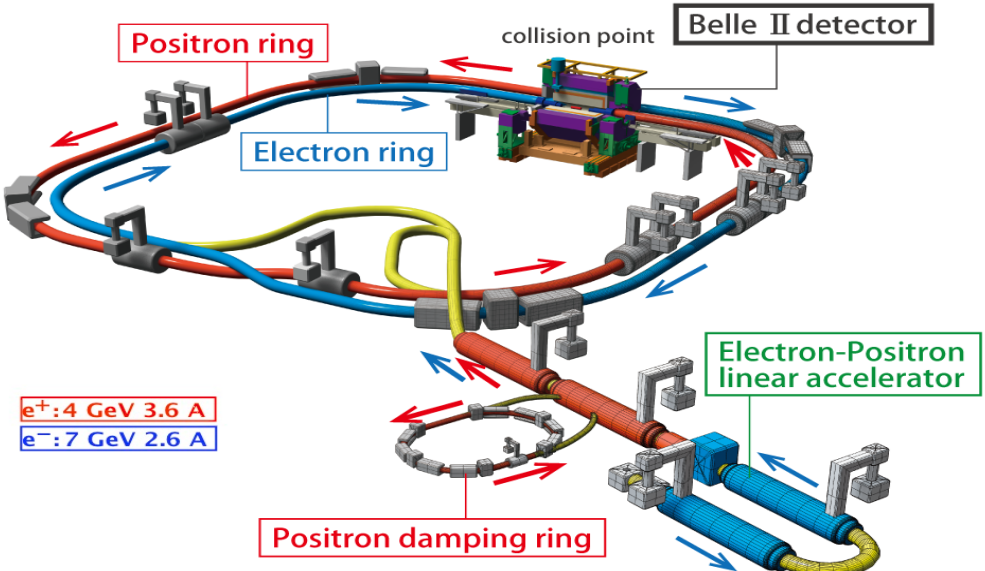
A NEW YORK TIMES NOTABLE BOOK OF THE YEAR

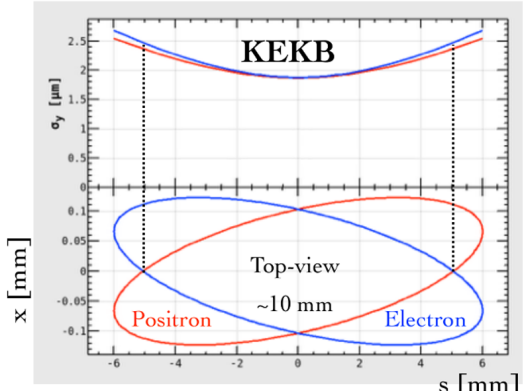
"The concepts are breathtaking . . . the general thrust of modern physics is amazingly well described." —The New York Times Book Review

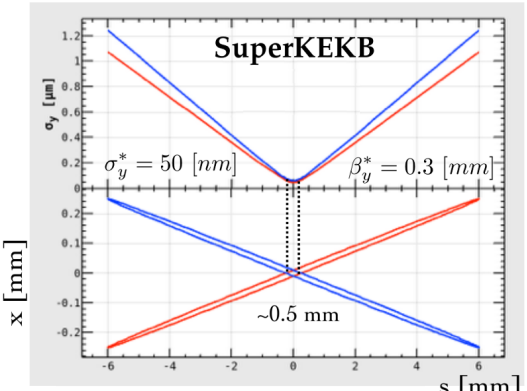
PAUL DAVIES

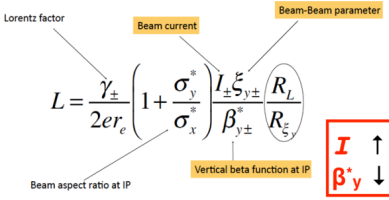
Author of THE MIND OF GOD and ABOUT TIME


how?

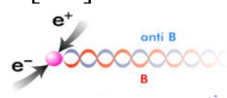

Positron ring
collision point
Belle II detector
Electron ring
Electron-Positron
linear accelerator
e+: 4 GeV 3.6 A
e−: 7 GeV 2.6 A
Positron damping ring

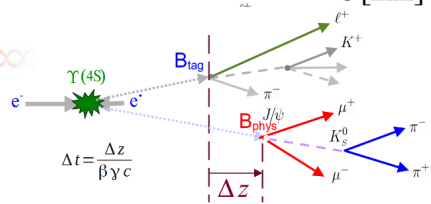




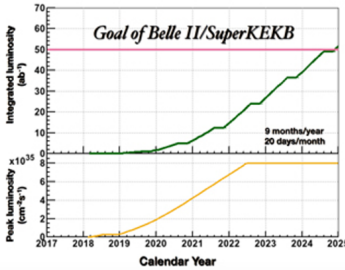


I ↑ x 2
β^*_y ↓ x 1/20

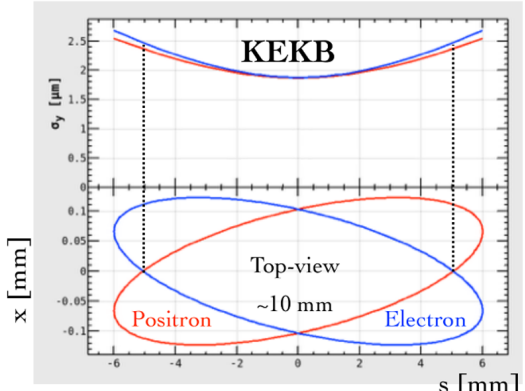


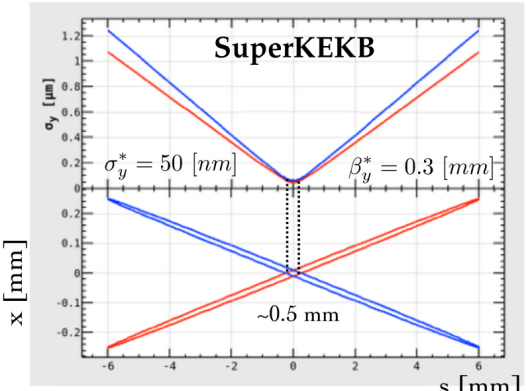


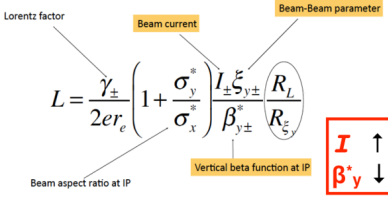
SuperKEKB luminosity projection



LHC (HL-LHC) luminosity projection

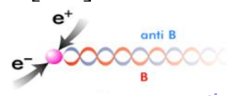


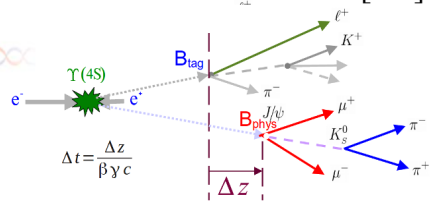


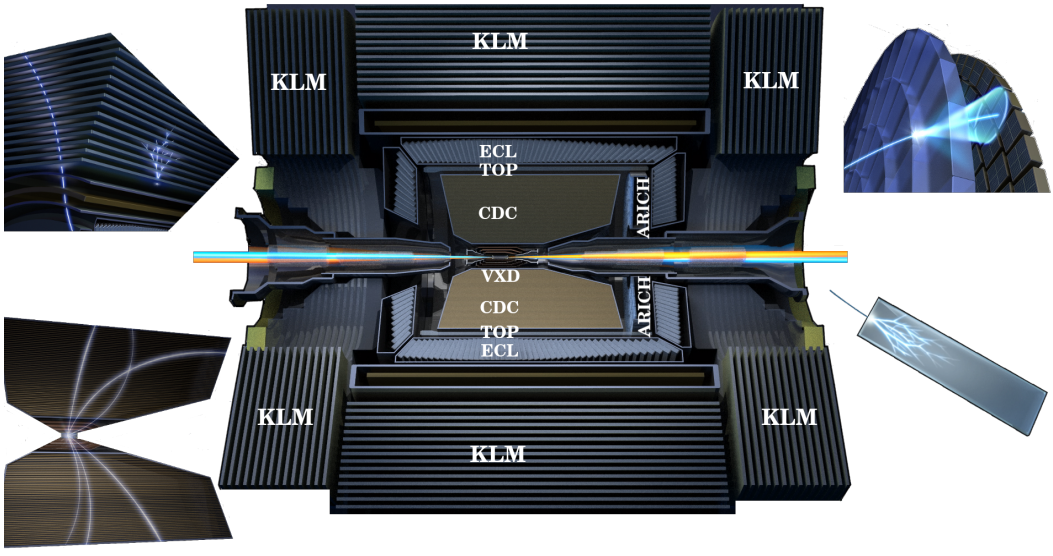


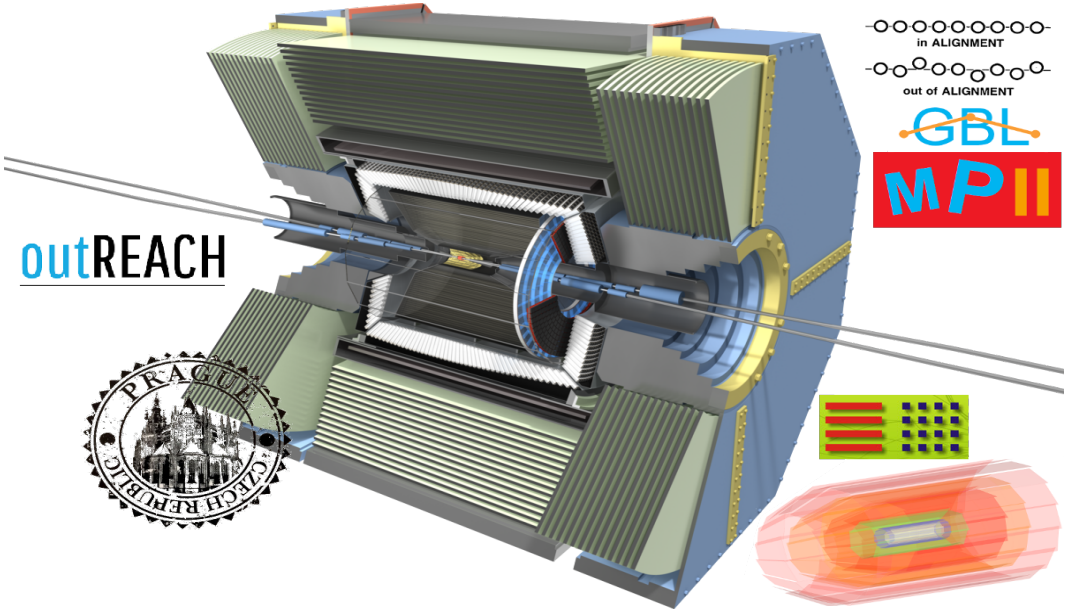
I ↑ x 2

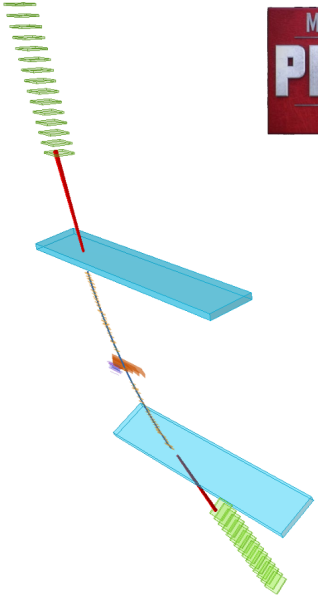
β^*_y ↓ x 1/20





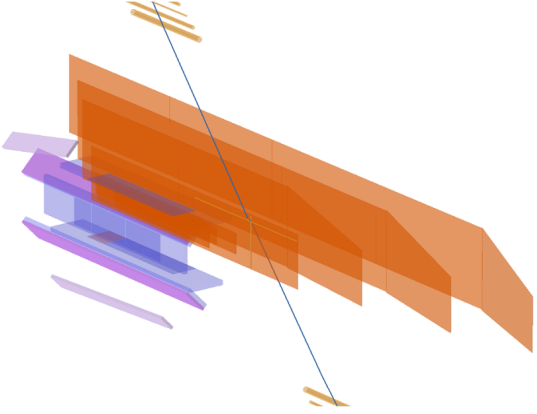

KLM
KLM
KLM
ECL
TOP
CDC
ARICH
VXD
CDC
ARICH
TOP
ECL
KLM
KLM
KLM


in ALIGNMENT
out of ALIGNMENT
GBL
MPII
outREACH
PRAGUE
CZECH REPUBLIC




MARVEL CINEMATIC
PHASE TWO
UNIVERSE


SuperKEKB Commissioning Detector
BEAST II
獣
Belle II Collaboration




MARVEL CINEMATIC


...ľúbim Petku
moju sestru...
CP
...ľúbim Petku
moju sestru...
ľúbim Petku
moju sestru...