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# BELLE II EXPERIMENT

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Z. Dolezal, IPPOG CB meeting Nov 2017

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# EXPERIMENT

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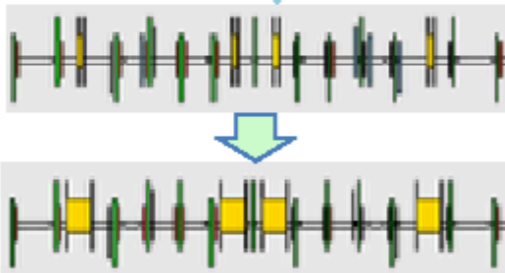
- Asymmetric energy  $e^+e^-$  collider (B-factory) upgrade SuperKEKB producing  $\Upsilon$  resonance which decays to B-mesons
- CP Violation and BSM studies (matter-antimatter asymmetry)
- Upgraded experiment starts data taking in 2018

# ACCELERATOR UPGRADE

## KEKB → SuperKEKB

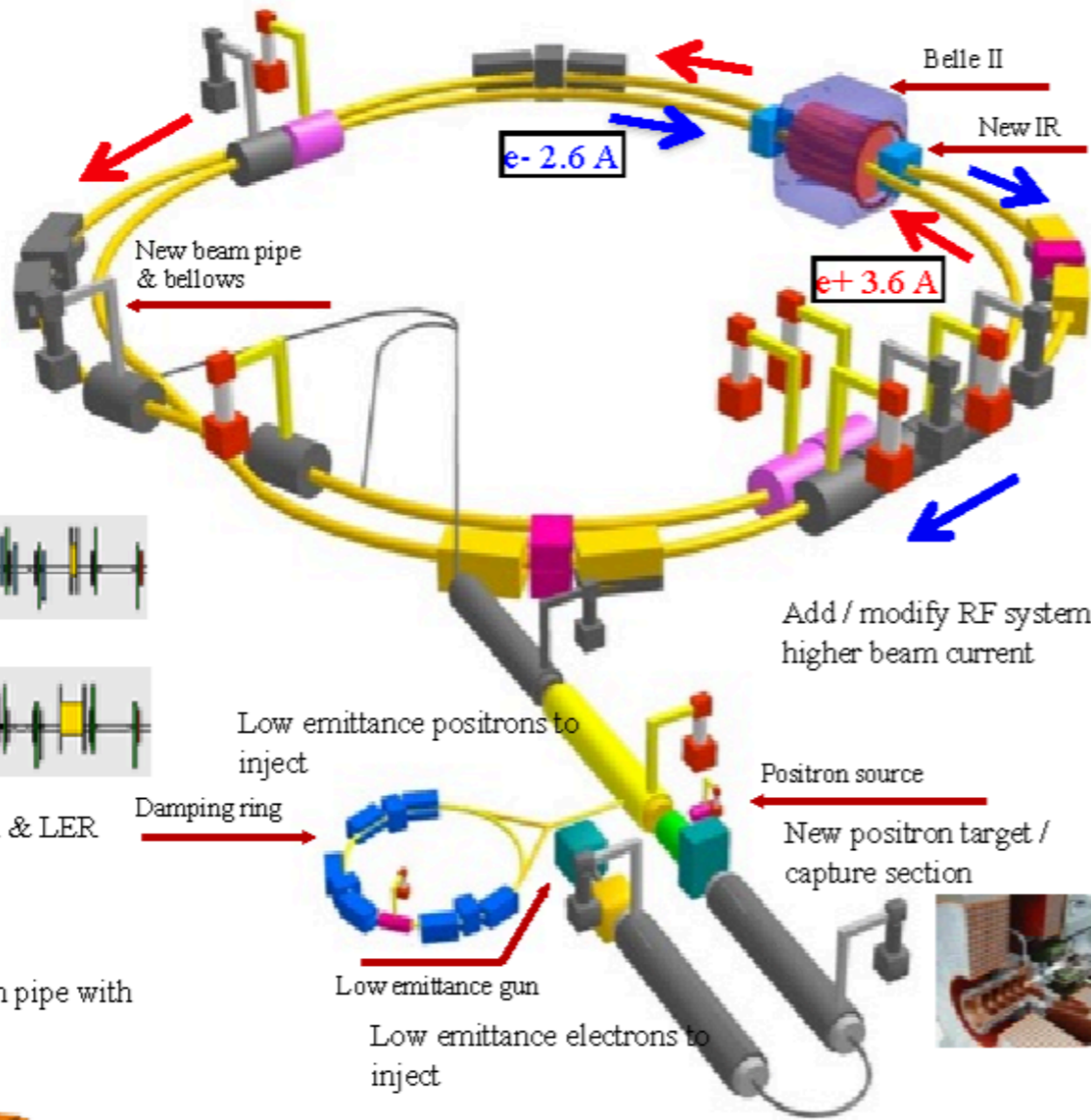
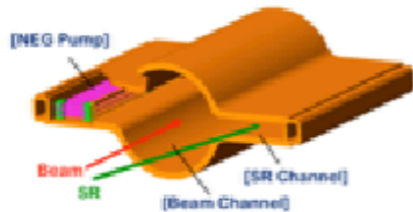


Replace short dipoles with longer ones (LER)

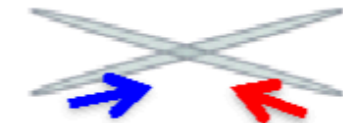


Redesign the lattices of HER & LER to squeeze the emittance

TiN-coated beam pipe with antechambers



Colliding bunches



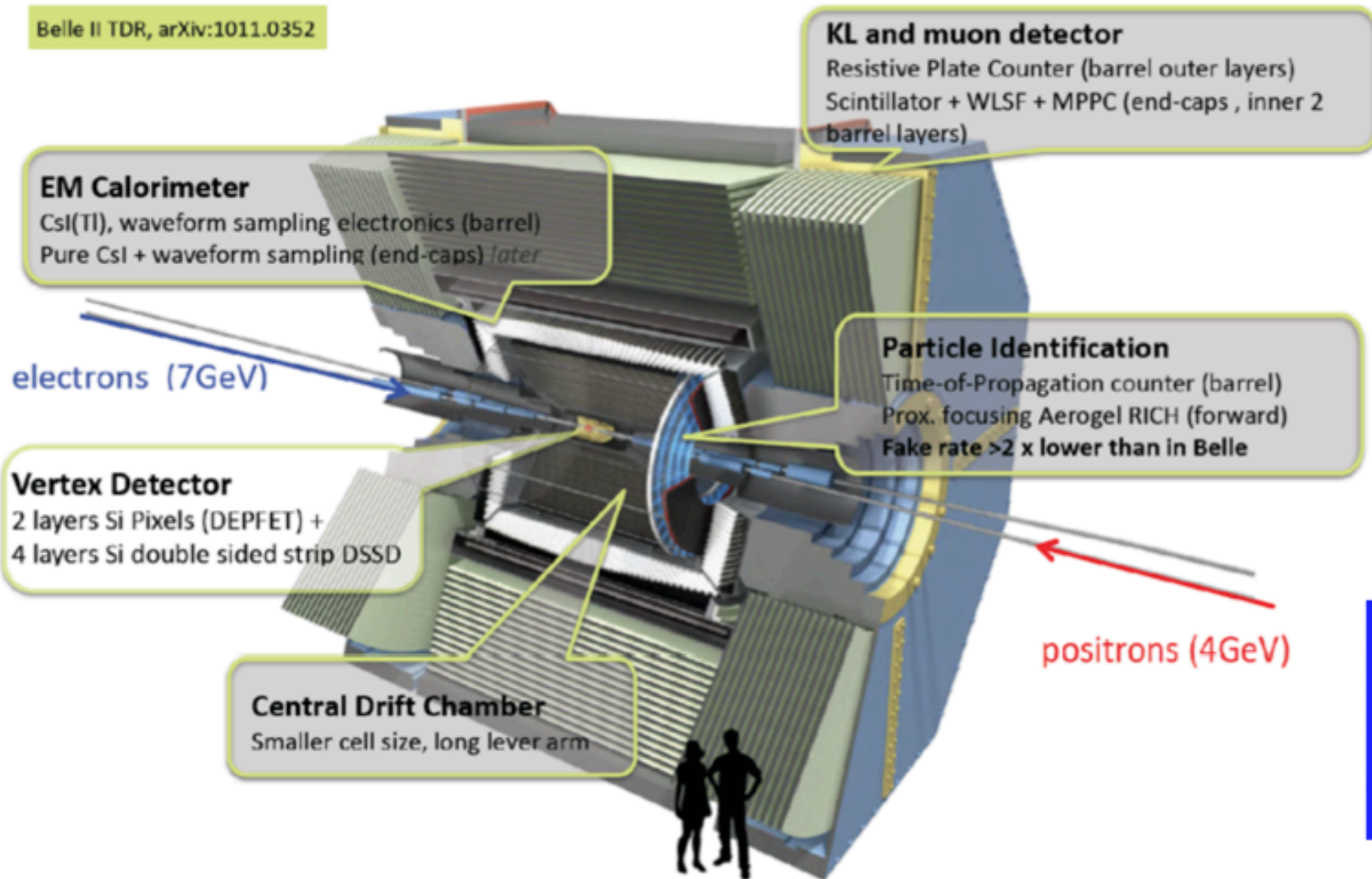
New superconducting / permanent final focusing quads near the IP



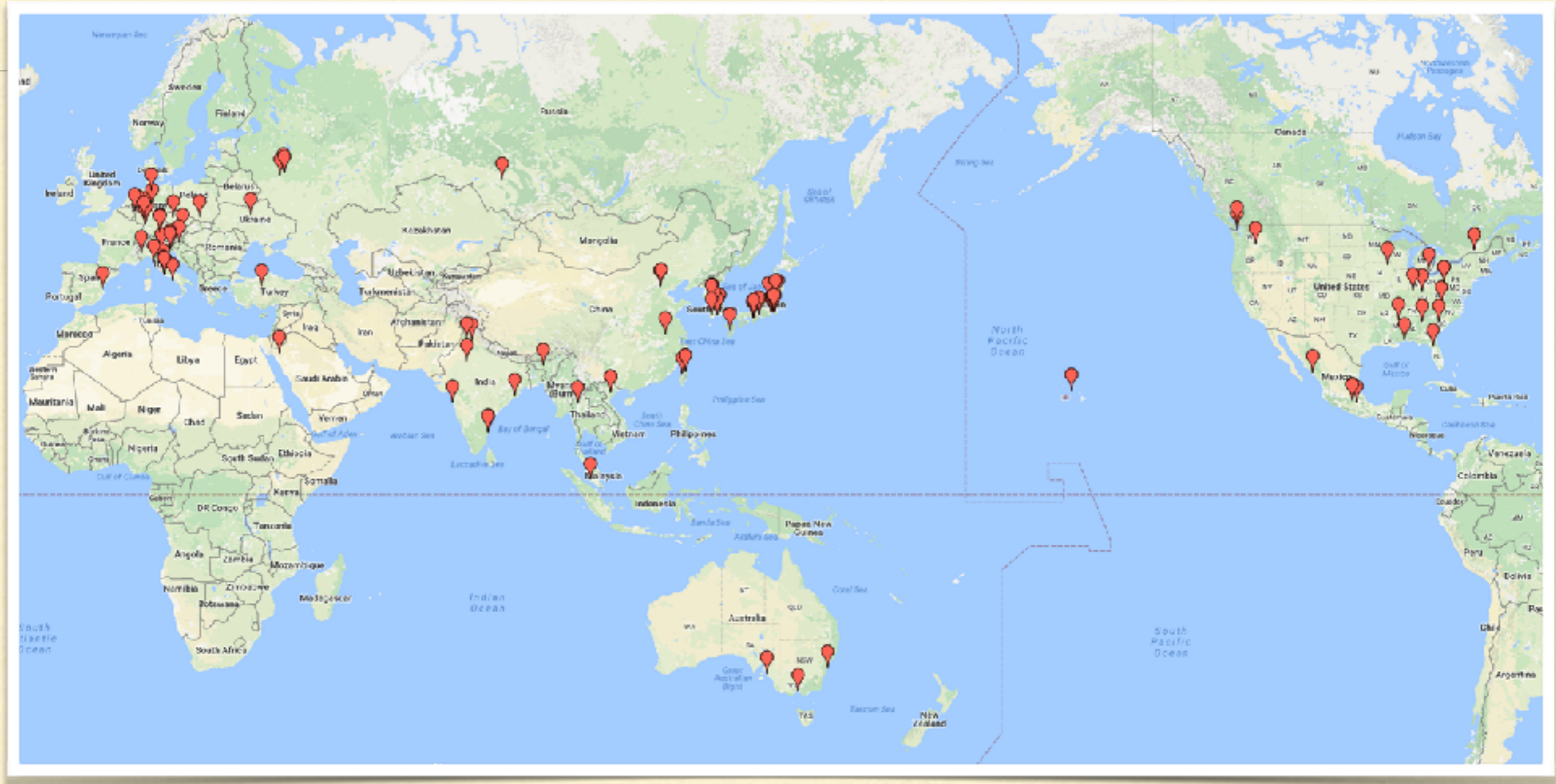
**To obtain x40 higher luminosity**

# DETECTOR UPGRADE

Belle II TDR, arXiv:1011.0352



# COLLABORATION



775 colleagues, 105 institutions, 25 countries

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# OUTREACH ACTIVITIES

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- Outreach group active
- Social network activities:
  - [belle2.jp](http://belle2.jp) (general public page)
  - Twitter (400 followers, 10 posts/month)
  - Facebook (900 followers, 10 posts/month)
- Masterclass preparations
- Virtual reality application
- Photography competition
- Lectures, analysis camps, articles, etc., events: first collisions

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WEB: [BELLE2.JP](http://BELLE2.JP)

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# Welcome to the Belle II Experiment

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In the big bang, matter and antimatter should have been created in equal amounts. But why is the universe today filled almost only with matter?

# FACEBOOK, TWITTER

Today is #darkmatterday. Read more about dark matter research at #Belle2 at [belle2.jp/discover...](http://belle2.jp/discover...) [twitter.com/i/web/status/9...](https://twitter.com/i/web/status/9...)



**Belle II Experiment**

@belle2collab • Oct 31



Winning entries in the 6th photography competition are from E. Graziani, H. Atmacan, and M. Friedl #b2gm #belle2



**Belle II Experiment**

@belle2collab • Oct 13



The 3rd general meeting of the JENNIFER consortium was held at @KEK\_en: [www2.kek.jp/ipns/en/post/2...](http://www2.kek.jp/ipns/en/post/2...) #Belle2



**Belle II Experiment**

@belle2collab • Oct 9

A high profile Slovenian scientific and ambassadorial delegation met with Prof. M. Yamauchi, Director General of... [twitter.com/i/web/status/9...](https://twitter.com/i/web/status/9...)



**Belle II Experiment**

@belle2collab • Oct 8

The assembly of the Silicon Vertex Detector of the #Belle2 experiment has started! read more:... [twitter.com/i/web/status/9...](https://twitter.com/i/web/status/9...)



**Belle II Experiment**

... ARICH and forward ECL have been combined and carefully transported to the #Belle2 detector... [twitter.com/i/web/status/9...](https://twitter.com/i/web/status/9...)



**Belle II Experiment**

@belle2collab • Oct 6

Prof. Pedlar presented a talk on "Exotic and conventional bottomonium physics prospects at Belle II" at EXA2017 con... [twitter.com/i/web/status/9...](https://twitter.com/i/web/status/9...)



**Belle II Experiment**

@belle2collab • Sept 20



# BELLE II ROLL-IN: WEBCAST

**niconico Live**



<http://live.nicovideo.jp/watch/lv294399745>

8hrs live webcast with invited guests  
35,000 viewers  
more than 10,000 comments

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# IN-KIND CONTRIBUTIONS

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- Providing easy and open access to special approved Belle/Belle II datasets to be used for educational programs;
- Developing, maintaining and giving easy and open access to specific tools sufficient for analysis of these data sets;
- Providing up-to-date documentation in support of the above-mentioned data and tools;
- Providing a measurement programme suitable for Masterclasses upon the data and tools available;
- Giving adequate support in the execution of the Particle Physics Masterclasses (moderators for videoconferences, tutors in the execution of Masterclass programs participating and supporting the local organization of Masterclasses events when there is need);

# MASTERCLASSES DEVELOPMENT

## Start putting the blocks together

Fixed block connections – minimize errors

Basic quantities of the particles

**Belle II Masterclass**  
Number of events: 10000  
First event: 0  
Data Source: hadron-1  
Print particle list? No  
Particle List

**Select Particles**  
Particles  
Charge: Any  
Type: all particles  
Histogram

**Histogram**  
Title: All particles,cos(polar angle),N  
Number of bins: 100  
Min: 5  
Max: 5  
Variable: cos(polar ang.)

Plot different variables :

- mass,
- momentum,
- energy,
- charge,
- identity,
- px,py,pz,pT
- cos(theta),
- theta

PESTOTNIK, IJS : BELLE II MASTERCLASS

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# STATUS

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- Belle II interested to join IPPOG
- Belle II Institutional Board endorsed the Expression of Interest in October
- If accepted, we look forward to fruitful collaboration!