



Pacific Northwest
NATIONAL LABORATORY

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Near-term Future Opportunities Roundtable Discussion

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Goal of this discussion

- ▶ Focus on immediate plans for LHC, BES-III, and Belle-II, i.e. the data set between now and the next QWG in ~1.5 years.
- ▶ The proposal is to have experimental representation and some theorists, to give some broad (or maybe very specific?) ideas of what the experiments will/should focus on.



Belle II – Schedule

► Phase 1 (2016)

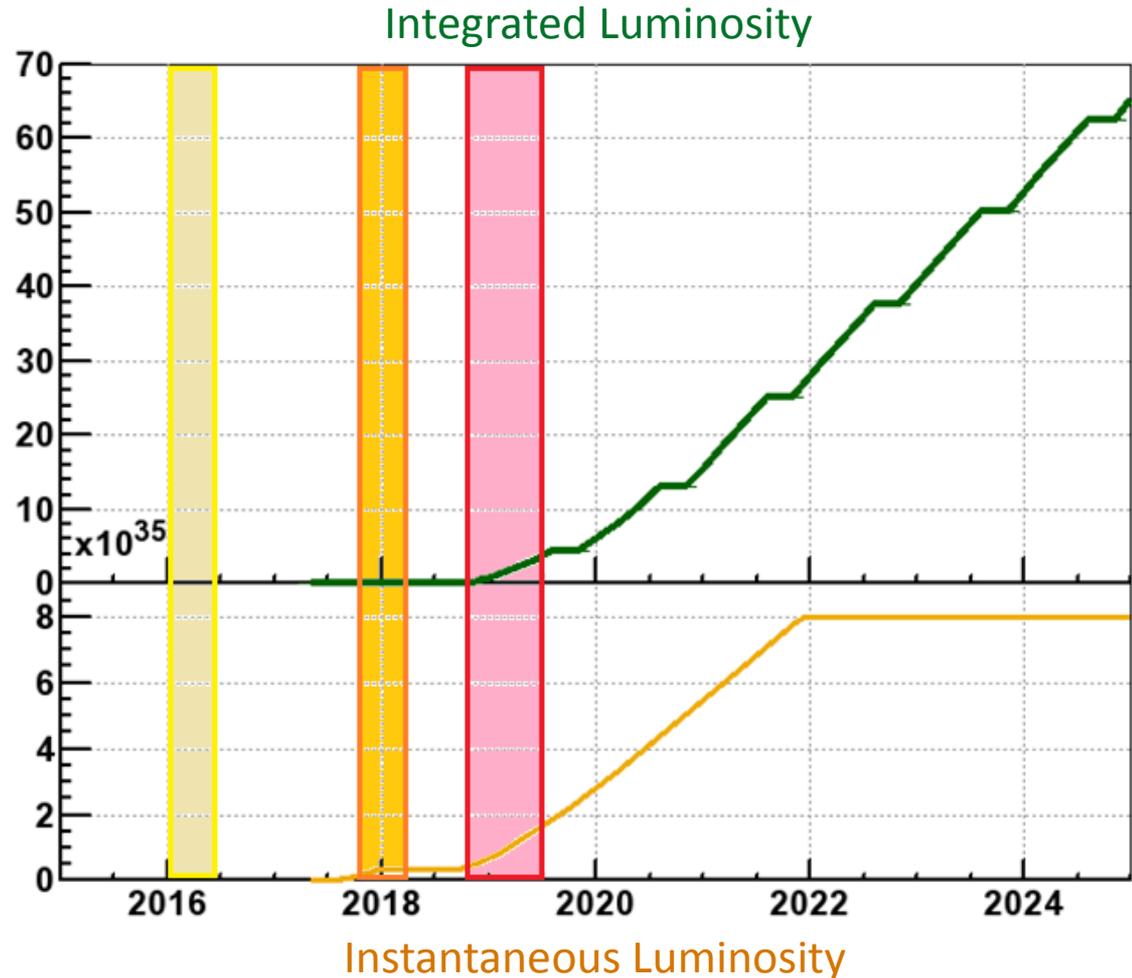
- Beam but no collisions
- No Belle II detector

► Phase 2 (Fall 2017)

- Detector w/o vertexing
- $20 \pm 20 \text{ fb}^{-1}$ collisions

► Phase 3 (Fall 2018)

- Full detector/beam
- $300+ \text{ fb}^{-1}$?





Belle II – Early Physics?

Energy	Outcome	Lumi (fb ⁻¹)	Comments
Υ(1S) On	N/A	60+	-No interest identified -Low energy
Υ(2S) On	New physics searches	20+	-Requires special trigger
Υ(1D) Scan	Particle discovery	10-20	-Already accessible in B Factories?
Υ(3S) On	Many -onia topics	200+	-Known resonance -Luminosity requirement: Phase 3
Υ(3S) Scan	Precision QED	~10	-Understanding of beam conditions needed
Υ(2D) Scan	Particle discovery	10-20	-Unknown mass
>Υ(4S) On	Particle discovery?	10+?	-Energy to be determined
Υ(6S) On	Particle discovery?	30+?	-Upper limit of machine energy
Single γ	New physics?	30+	-Special triggers required

► Input from QWG

- Other energy points of interest
- Specific things from Υ(3S) or Υ(6S) you would find interesting
- Spectroscopic theory predictions (mass, width, rates)
 - Hadronic/radiative bottomonium decays, D/F-wave
- Exotic/BSM/other stuff?