

Implications of LHCb measurements and future prospects

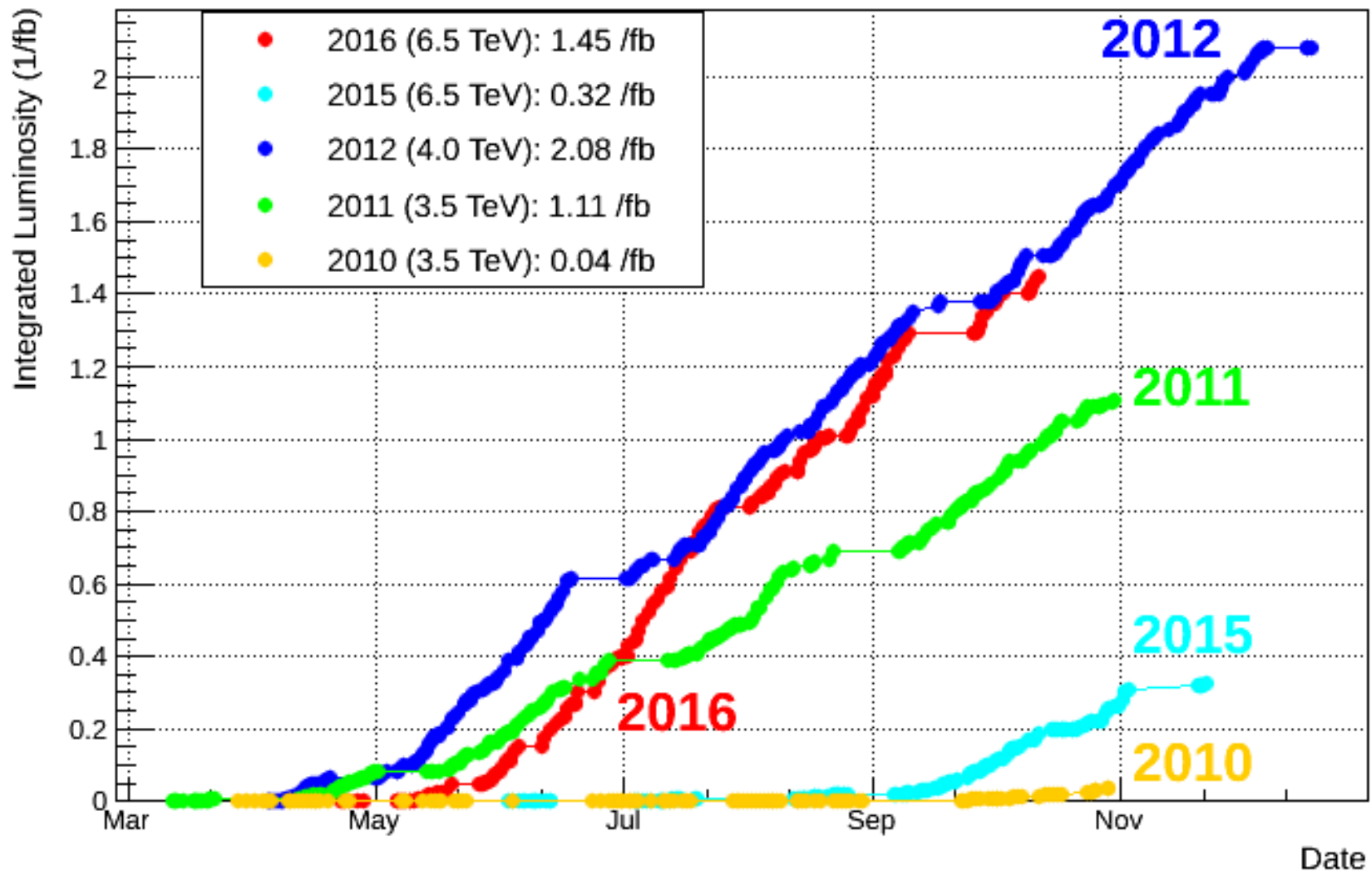
Organising committee

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Implications of LHCb measurements and future prospects

- Welcome to the 6th edition of this meeting between the LHCb collaboration and the theory community!
- As in previous years, the principal purpose of the meeting is to discuss the latest results from LHCb
- But this year there's a novelty: we'll also discuss theoretical and experimental prospects for a possible future LHCb upgrade, targeting an integrated luminosity of 300 fb^{-1}

LHCb Integrated Luminosity in pp collisions 2010-2016



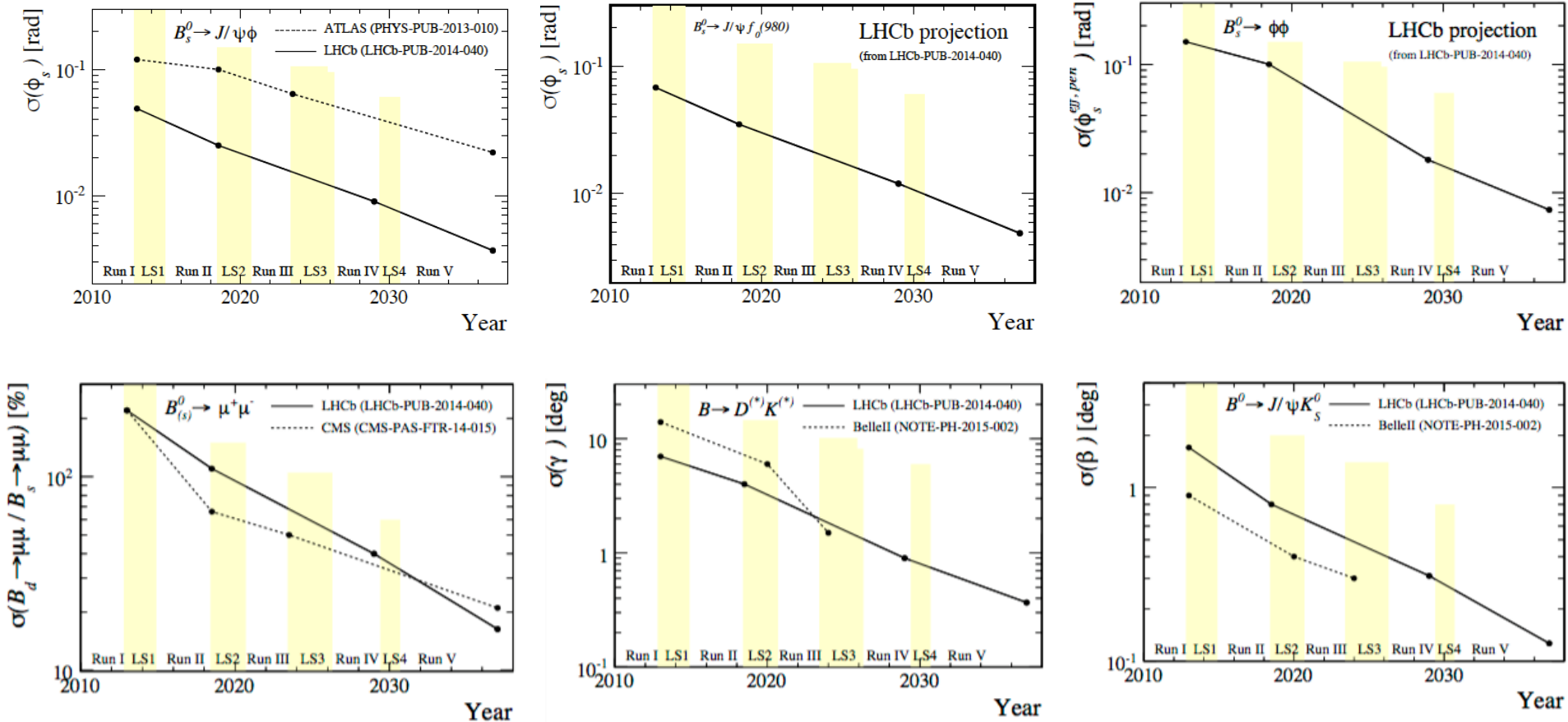
LHCb luminosity prospects

	LHC era			HL-LHC era	
	Run 1 (2010-12)	Run 2 (2015-18)	Run 3 (2021-24)	Run 4 (2027-30)	Run 5+ (2031+)
LHCb	3 fb ⁻¹	8 fb ⁻¹	→	50 fb ⁻¹	*300 fb ⁻¹

* assumes a future LHCb upgrade to raise the instantaneous luminosity to $2 \times 10^{34} \text{ cm}^{-2} \text{ s}^{-1}$

- LHC has been delivering luminosity at an incredibly high pace in Run-2
- LHCb upgrade comes already after Run-2
- LHCb is starting to consider a “phase-2” upgrade for Run 5 and beyond
 - The target is to raise the instantaneous luminosity by a factor 10 in order to integrate 300 fb⁻¹ in a few years of data taking

Projections on some key observables



- Run-5 projections assume that an upgrade of the LHCb detector to raise the instantaneous luminosity of $2 \times 10^{34} \text{ cm}^{-2} \text{ s}^{-1}$ will be made

Concerning the phase-2 upgrade

- Most likely it will be the last opportunity to push heavy flavour physics to extreme precision for many years to follow
- It's a big technological endeavor and we need the full support of the whole community to succeed
- A strong physics case needs to be defined
 - We are thinking of a (relatively) short write up as an outcome of the workshop, to be signed by the LHCb collaboration and by other participants who will want to give their contribution and support

2016 streams

- This meeting is arranged in four streams
 - CP violation in Beauty and Charm
 - Conveners: Martin Jung, Sean Benson, Mark Williams
 - Semileptonic and rare decays of Beauty, Charm and Strange
 - Conveners: Christoph Bobeth, Paula Alvarez Cartelle, Antonio Romero Vidal
 - Not only flavour: precision measurements and new physics searches in the forward region
 - Conveners: Admir Greljo, Paolo Gandini, Cedric Potterat
 - Puzzles in QCD and spectroscopy with heavy flavours
 - Conveners: Alessandro Pilloni, Yiming Li, Mark Whitehead

The rules of the game

- This workshop, as in previous years, aims at stimulating informal discussion between the LHCb and theory communities
- For this reason, we exceptionally allow our speakers to show results that we wouldn't present at ordinary conferences
- Remember the following nomenclature
 - Results marked as “LHCb” → public results
 - Results marked as “LHCb preliminary” → preliminary results shown at conferences; public results
 - Results marked as “LHCb unofficial” → still unpublished and not yet ready to be shown to the outside; i.e. for your eyes only!