

# B2TiP WebHome



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## Belle II Theory Interface Platform (B2TiP)

### Overview

The "Belle II-Theory Interface Platform" is a joint theory-experiment effort to study the potential impacts of the Belle II program. A series of workshops was run from June 2014 culminating as the B2TiP / Belle II Physics Book, summarising many important observables to be measured at Belle II, their experimentally achievable precision and their impact on our understanding of the theory (Standard Model and New Physics).

Report status and current draft ( [link](#) ).

*This project is an official activity of Belle II, approved by the executive board of the Belle II Collaboration in February 2014.*

### Workshop Dates

B2TiP Meeting	Meeting Agenda	Belle (II) associated meetings
<b>2018 October 22-26, Belle II Physics week @ KEK</b>	<a href="#">workshop indico</a>	BGM October 11-12, B2GM October 15-19
2016 November 15-17, Editorial meeting @ MIAPP Munich	<a href="#">workshop indico</a>	
2016 October 10, Belle II impact plot meeting (Preparation for MIAPP Meeting)	<a href="#">workshop indico</a>	
2016 May 23-25 @ Pittsburgh (local organiser V. Savinov)	<a href="#">workshop indico</a>	
2016 February 22-24 @ LAL, New physics "Follow-up" meeting	<a href="#">workshop indico</a>	
2015 November 9-10 @ PNNL, New physics & EWP WGs	<a href="#">workshop indico</a>	
2015 October 28-29 @ KEK, merged with KEKFF October 26-27 (Tokyo)	<a href="#">workshop indico</a>	BGM October 15-16, B2GM October 19-23
2015 April 27-29 @ Krakow (Local organiser A. Bozek)	<a href="#">workshop indico</a>	
2015 February 23-25, New Physics WG @ KIT (Local organiser U. Nierste)	<a href="#">workshop indico</a>	
2014 October 30-31 @ KEK, merged with KEKFF October 28-29. @ KEK	<a href="#">workshop indico</a>	B2GM November 3-6, BGM November 7-8
<a href="#">2014 June 16-17 @ KEK</a>	<a href="#">workshop indico</a>	B2GM June 18-21, BGM June 22-23

### Committees

**Advisory  
Committee**

**Organisers and report editors**

Emi Kou	LAL
Phillip Urquijo (B2 Physics Coord.)	Melbourne

**Ex Officio**

Franco Forti (B2 EB Chair)	Pisa
Thomas Brodner (B2 Spokesperson)	Hawaii
Marco Ciuchini (KEK FF Advisor)	Rome
Thomas Mannel (KEK FF Advisor)	Siemens

Tim Gershon	Warwick
Bostjan Golob	JSLjubljana
Shoji Hashimoto	KEK
Francois Renée Lebedere	LAL
Unkonwunser (zligeti)	LBL
Hito Shimura	IPMU
Mattias Neuberger	Mainz
Yoshihide Sakai	KEK
Junko Shimizu	Ohi

## Working Groups

The WG definitions and their scopes are given below. They are a guide only, some topics will be of higher priority than others.

WG	Overview	Coordinators
WG1 <a href="#">Semileptonic &amp; Leptonic B decays</a>	<ul style="list-style-type: none"> <li>Semileptonic <math>\bar{b} \rightarrow \bar{c}, \bar{s}, \bar{u}, \bar{d} \ell^+ \ell^-</math> transitions: <math>\bar{b} \rightarrow \bar{c} \ell^+ \ell^-</math>, <math>\bar{b} \rightarrow \bar{s} \ell^+ \ell^-</math>, New physics.               <ul style="list-style-type: none"> <li>Exclusive</li> <li>Inclusive</li> </ul> </li> <li>Semileptonic <math>\bar{b} \rightarrow \bar{c}, \bar{s}, \bar{u}, \bar{d} \tau^+ \tau^-</math> and <math>\bar{b} \rightarrow \bar{c}, \bar{s}, \bar{u}, \bar{d} \tau^+ \nu_\tau</math> transitions with tau leptons</li> <li>Charged leptonic decays, <math>\bar{b} \rightarrow \bar{c} \ell^+ \nu_\ell</math>, <math>\bar{b} \rightarrow \bar{s} \ell^+ \nu_\ell</math></li> <li>Radiative leptonic decays, <math>\bar{b} \rightarrow \bar{c} \ell^+ \ell^- \gamma</math></li> </ul>	Guglielmo De Nardo (Naples)  Florian Bernlochner (KIT)  Minoru Tanaka (Osaka)  Frank Tackmann (DESY)  Ryoutarō Watanabe (IBS)  <a href="#">A. Kronfeld (Fermilab)</a>
WG2 <a href="#">Radiative &amp; Electroweak Penguins</a>	<ul style="list-style-type: none"> <li>Radiative               <ul style="list-style-type: none"> <li>Inclusive radiative decays: <math>\bar{b} \rightarrow \bar{c}, \bar{s}, \bar{u}, \bar{d} \ell^+ \ell^- \gamma</math> via inclusive, partial and full reconstruction tagging methods.</li> <li>Inclusive radiative decays: <math>\bar{b} \rightarrow \bar{c}, \bar{s}, \bar{u}, \bar{d} \ell^+ \ell^- \gamma</math> via sum of exclusive methods.</li> <li>Exclusive radiative decays (polarisation and asymmetries):                   <ul style="list-style-type: none"> <li><math>\bar{b} \rightarrow \bar{c}, \bar{s}, \bar{u}, \bar{d} \ell^+ \ell^- \gamma</math></li> <li><math>\bar{b} \rightarrow \bar{c}, \bar{s}, \bar{u}, \bar{d} \ell^+ \ell^- \gamma</math></li> </ul> </li> <li>TCPV in Radiative decays, e.g. <math>\bar{b} \rightarrow \bar{c}, \bar{s}, \bar{u}, \bar{d} \ell^+ \ell^- \gamma</math> (overlap with bottom)</li> </ul> </li> <li>Electroweak               <ul style="list-style-type: none"> <li>EWP with neutrinos, <math>\bar{b} \rightarrow \bar{c}, \bar{s}, \bar{u}, \bar{d} \ell^+ \ell^- \nu_\ell</math></li> <li>Inclusive dilepton decays via sum of exclusive, and fully inclusive methods: <math>\bar{b} \rightarrow \bar{c}, \bar{s}, \bar{u}, \bar{d} \ell^+ \ell^-</math></li> <li>Exclusive dilepton decays with a focus on electron modes: <math>\bar{b} \rightarrow \bar{c}, \bar{s}, \bar{u}, \bar{d} \ell^+ \ell^-</math></li> </ul> </li> <li>Rare and forbidden               <ul style="list-style-type: none"> <li><math>\bar{b} \rightarrow \bar{c}, \bar{s}, \bar{u}, \bar{d} \ell^+ \ell^-</math></li> <li>Neutral leptonic decays, <math>\bar{b} \rightarrow \bar{c}, \bar{s}, \bar{u}, \bar{d} \ell^+ \ell^- \nu_\ell</math>, <math>\bar{b} \rightarrow \bar{c}, \bar{s}, \bar{u}, \bar{d} \ell^+ \ell^- \nu_\ell \nu_\ell</math></li> <li>Lepton flavour and number violating decays, <math>\bar{b} \rightarrow \bar{c}, \bar{s}, \bar{u}, \bar{d} \ell^+ \ell^- \nu_\ell</math></li> </ul> </li> </ul>	Akimasa Ishikawa (Tohoku)  Saurabh Sandilya (IIT Hyderabad)  Ulrich Haisch (Oxford)  Thorsten Feldman (Siegen)
WG3 <a href="#">alpha = phi_2 &amp; beta = phi_1</a>	<ul style="list-style-type: none"> <li><math>\bar{b} \rightarrow \bar{c}, \bar{s}, \bar{u}, \bar{d} \ell^+ \ell^- \nu_\ell</math></li> <li><math>\bar{b} \rightarrow \bar{c}, \bar{s}, \bar{u}, \bar{d} \ell^+ \ell^- \nu_\ell</math> <ul style="list-style-type: none"> <li>precision in <math>\bar{b} \rightarrow \bar{c}, \bar{s}, \bar{u}, \bar{d} \ell^+ \ell^- \nu_\ell</math></li> <li>New phases in <math>\bar{b} \rightarrow \bar{c}, \bar{s}, \bar{u}, \bar{d} \ell^+ \ell^- \nu_\ell</math> transitions, <math>\bar{b} \rightarrow \bar{c}, \bar{s}, \bar{u}, \bar{d} \ell^+ \ell^- \nu_\ell</math>, <math>\bar{b} \rightarrow \bar{c}, \bar{s}, \bar{u}, \bar{d} \ell^+ \ell^- \nu_\ell</math></li> </ul> </li> <li>TCPV in Radiative decays, e.g. <math>\bar{b} \rightarrow \bar{c}, \bar{s}, \bar{u}, \bar{d} \ell^+ \ell^- \gamma</math> (overlap with above)</li> </ul>	Luigi Li Gioi (MPI Munich)  Alessandro Gaz (Nagoya)  Jure Zupan (Cincinnati)  Satoshi Mishima (KEK)
WG4 <a href="#">Gamma = phi_3</a>	<ul style="list-style-type: none"> <li>Charm CP Eigenstates, GLW method (Gronau- London- Wyler) e.g. <math>\bar{B} \rightarrow D^+ K^0 K^0, \bar{B} \rightarrow D^0 K^+ K^0</math></li> <li>Doubly Cabibbo suppressed decays, ADS method (Atwood- Dunietz- Soni), e.g. <math>\bar{B} \rightarrow D^+ K^0 K^0</math></li> <li>Three body decays, GGSZ Dalitz method (Giri- Grossman- Soffer - Zupan), e.g. <math>\bar{B} \rightarrow D^+ K^0 K^0 K^0, \bar{B} \rightarrow D^0 K^+ K^0 K^0</math></li> <li>Combined GLW+ADS method e.g. <math>\bar{B} \rightarrow D^+ K^0 K^0, \bar{B} \rightarrow D^0 K^+ K^0</math></li> </ul>	Jim Libby (Madras)  Yuval Grossman (Cornell)  Monika Blanke (CERN)

<p>WG5</p> <p>Charmless Hadronic B Decay</p>	<ul style="list-style-type: none"> <li>• Direct CP Violation</li> <li>• <math>B \rightarrow \pi \pi</math> modes, angular analyses</li> <li>• Charmless hadronic modes,</li> <li>• 2 body <math>B \rightarrow \pi \pi</math></li> <li>• 3 body with Dalitz methods,</li> <li>• Hadronic <math>B \rightarrow \pi \pi</math> decays</li> <li>• QCD factorisation, flavour symmetry breaking</li> </ul>	<p>Pablo Goldenzweig (KIT)</p> <p>Bilas Pal (BNL)</p> <p>Martin Beneke (TUM)</p> <p>Cheng-Wei Chiang (NCU)</p> <p>S. Sharpe (Washington)</p>
<p>WG6</p> <p>Charm</p>	<ul style="list-style-type: none"> <li>• <math>B \rightarrow \pi \pi</math> mixing</li> <li>• TCPV in Charm</li> <li>• Direct CPV in Charm</li> <li>• Radiative decays <math>D \rightarrow V \gamma</math></li> <li>• Rare/Forbidden charm decays and NP: <math>B \rightarrow \pi \pi</math>, <math>B \rightarrow \pi \pi</math></li> <li>• Leptonic and Semileptonic charm decays</li> </ul>	<p>Giulia Casarosa (Pisa)</p> <p>Alan Schwartz (Cincinnati)</p> <p>Alexey Petrov (Wayne)</p> <p>Alex Kagan (Cincinnati)</p>
<p>WG7</p> <p>Quarkonium (like)</p>	<ul style="list-style-type: none"> <li>• Bottomonia at <math>\sqrt{s} = 10, 11, 12, 13, 14, 15</math></li> <li>• Inclusive baryon and meson production in <math>\Upsilon \rightarrow \pi \pi</math> decays</li> <li>• Energy scan studies of bottomonia</li> <li>• Charmonia, exotic, charmonium-like <ul style="list-style-type: none"> <li>• below the open-charm threshold</li> <li>• above the open-charm threshold</li> </ul> </li> <li>• <math>\Upsilon \rightarrow \pi \pi</math>-Hadron production at <math>\sqrt{s} = 10, 11, 12, 13, 14, 15</math></li> </ul>	<p>Roman Mizuk (ITEP)</p> <p>Roberto Mussa (Torino)</p> <p>Chengping Shen (Beihang)</p> <p>Bryan Fulsom (PNNL)</p> <p>Christoph Hanhart (Juelich)</p> <p>Yuichiro Kiyo (Juntendo)</p> <p>Antonello Polosa (Rome)</p> <p>S. Prelovsek (Ljubljana)</p>
<p>WG8</p> <p>Tau, low multiplicity &amp; EW</p>	<ul style="list-style-type: none"> <li>• Tau <ul style="list-style-type: none"> <li>• Lepton flavour violating <math>\tau \rightarrow \mu \gamma</math> decays</li> <li>• <math>\tau</math> properties</li> <li>• Lepton universality</li> <li>• CP Violation</li> <li>• Precision measurements of SM decays</li> </ul> </li> <li>• Low multiplicity</li> <li>• Two Photon Physics</li> <li>• Precision electroweak physics ("LEP"-physics)</li> <li>• Searches for dark photon in direct production (via kinetic mixing) and exotic final states</li> </ul>	<p>Kiyoshi Hayasaka (Niigata)</p> <p>Torben Ferber (UBC)</p> <p>Emilie Passemar (Indiana U.)</p> <p>Junji Hisano (Nagoya)</p>



