

16th International Conference on Heavy Quarks and Leptons (HQL2023)

Tuesday 28 November 2023 - Saturday 02 December 2023

TIFR, Mumbai

Book of abstracts

Table of contents

Hot Topic 1	1
Hot Topic 2	1
Kaon Physics	1
Precision Lepton Measurements	1
Neutrino Physics	1
CKM Matrix	1
Neutrino Physics	1
Spectroscopy	1
Precision Lepton Measurements	1
Spectroscopy	1
Rare Decays	2
Neutrino Physics	2
Rare Decays	2
CP Violation	2
New Experiments	2
New Experiments	2
Closeout	2
Rare Decays	2
Top Quark Physics	2
Theory of neutrinos	3
Neutrinoless double beta decay experiments	3
Status and prospects of the CONUS experiment	3
Solar Neutrinos	3
Heavy Neutrino Searches at hadron colliders	3
Neutrino oscillation parameters	3
Latest results from NOvA & T2K, and Hyper-K status	3
DUNE status	3
Role of neutrinos in the evolution of the universe	3

Status of the JUNO experiment	4
Status of ISMRAN experiment	4
Cosmic neutrinos at IceCube	4
Precision Measurements and Prospects with Kaons at CERN	4
KOTO: status and future prospects	4
Measurments and prospects for KS decays at LHCb	4
SM predictions	4
BSM models	4
Hot topics from Belle II	5
Hot topics from LHCb	5
Theory of LFV	5
LFV in B and D decays	5
New LFV results from e+e- colliders	5
Results on LFV and LFUV at LHC	5
Study of charged current decays at LHCb	5
LFU tests and searches for new physics in charged current decays at Belle II	5
Extraction of $ V_{ub} $ and $ V_{cb} $ @ B-factories	6
Extraction of $ V_{cd} $ and $ V_{cs} $ @ BESIII	6
Theory of g-2	6
JPARC g-2/EDM preparations and prospects	6
EDM searches for leptons and hadrons	6
Tests of LFV with muons	6
Fermilab g-2 results and plans	6
CKM angle gamma including BESIII inputs	6
CP violation in charmless B decays	7
Study of pentaquark with heavy flavour quark-antiquark pair	7
Recent spectroscopy results from BESIII	7
Recent spectroscopy results from Belle II	7
Recent spectroscopy results from LHCb	7
Spectroscopy results from ATLAS and CMS	7
Spectroscopy results from ALICE	7
Recent spectroscopy highlights from COMPASS	7
Theory overview of rare decays	8
Highlights on $t\bar{t}b$ and single top cross section measurements and mass (inc. EFT)	8

SMEFT implications for flavour physics	8
Four tops, SM and BSM (inc. EFT)	8
Searches for FCNC, LFV, LI violation and anomalous couplings (inc EFT)	8
EFT for charged current decay	8
Anomalies in B-meson decays	8
Prospects of spectroscopy at STCF	8
Angular analyses of rare decays at LHC	8
Measurements of very rare processes at LHCb	9
Rare decays from Belle and Belle II	9
Experimental review of rare charm decays	9
Theory of CP violation	9
CP violation in the charm sector	9
Time-dependent CP violation in B ₀ decays	9
Time-dependent CP violation in B _s decays	9
CP properties of Higgs boson interactions with tau leptons	9
Search for B → K _s νν̄ decays at Belle II	10
Theory of B → K _s νν̄ decays	10
Belle II upgrade program	10
Progress on STCF in China	10
Goals and performance of LHCb Upgrade II	10
Flavour prospects at FCC-ee	10
Flavour prospects at CEPC	10
Truncation-independent Bayesian inference of form factors	10
SM predictions and BSM models	11
Status and perspectives of the ICARUS experiment	11
K → μ ⁺ μ ⁻ : within and beyond the SM	11
Coffee	11
Poster Session	11
The study of radiative B _s decays	11
Impact of more frequent ECAL transparency corrections on Level-1 and HLT trigger rates and resolution	11
Study of B _s → B _s [*] Λ _c ⁰ /B _s [*] Λ _c ⁺ with recoil mass approach	11
GNN based track finding for muon g-2/EDM experiment at J-PARC	11
Search for B → D [*] ηπ Decays with Belle II data	12
GPU based track finding for muon g-2/EDM experiment at J-PARC	12

Analysis of semileptonic $B \rightarrow 1(1260)\ell^- \ell^+$ process within SMEFT approach	12
Rare decays of B_s mesons	12
GNN-based muon energy reconstruction for INO-ICAL	12
Muon-electron elastic scattering events in INO-ICAL prototype	12
Exploring the mass spectra and decay properties of all charm tetraquark	12
Spin-Flavor oscillations of cosmic neutrino flux in intergalactic magnetic field	12
Study of $B_c^+ \rightarrow B_c^+ + B_c^+ B_c^0$ mode at Belle	12
A search for light Higgs in CMS	13
Spin-parity assignment of singly charmed baryons in quark-diquark picture	13
Study of strange particle production in O+O collision at LHC energy using a multi-phase transport model	13
Constraining New Physics with Possible DM Signatures from the Study of FCNC Processes	13
Indirect constraints on LEFT/HEFT Wilson coefficients from SMEFT	13
Effects of quark charge screening in M1 decays of charm baryons	13
Quantum Mismatch: Quantifying the Quantumness in Neutrino Oscillations	13
B_c to vector meson form factors and semileptonic decays	13
Charmonium Spectrum in a Non-Relativistic Framework	13
Decay constant and leptonic decay of B_c meson	14
Study of the lepton flavour violating decays $B_c \rightarrow B_c + \ell$	14
Spatial and Transverse structure of Heavy B and D-mesons	14
Kinematics and Particle Identification at Very High Energy Colliders	14
Spectroscopic study of strange-charmed mesons in Regge phenomenology	14
Missing energy in rare B-decays in the light of GeV scale dark matter	14
Masses of di-baryonic $\Xi(3) \Xi(3)$ states	14
Lepton flavor universality studies in W boson decays	14
Exploring Charged Lepton Flavor Violating Process involving B Mesons in SMEFT	14
Precision measurements of the top quark mass and decay width using CMS experiment	15
Extraction of $ V_{cd} $ and $ V_{cs} $ @ BESIII	15
Measurement of time-integrated raw asymmetry in $B_c^0 \rightarrow B_c^+ B_c^-$ decay at Belle II	15
Time-integrated WS-to-RS ratio of the $B_c^0 \rightarrow B_c^+ B_c^-$ decay at Belle II	15
Study of Heavy Flavoured Baryons	15
A lattice QCD study of $0(0^+) \{b c u\text{-bar } d\text{-bar}\}$ tetraquark T_{bc}	15
Welcome & Logistics	15
Best poster: GNN based track finding for muon g-2/EDM experiment at J-PARC	15
Best poster: Study of $B_c X_c \Lambda_0 K / K_S$ with recoil mass approach	16

Best poster: Quantum mismatch - quantifying the quantumness in neutrino oscillations	16
Closing words	16

Welcome / 0

Hot Topic 1

1

Hot Topic 2

2

Kaon Physics

3

Precision Lepton Measurements

4

Neutrino Physics

5

CKM Matrix

Neutrino Physics / 6

Neutrino Physics

7

Spectroscopy

8

Precision Lepton Measurements

9

Spectroscopy

10

Rare Decays

11

Neutrino Physics

12

Rare Decays

13

CP Violation

14

New Experiments

15

New Experiments

16

Closeout

17

Rare Decays

18

Top Quark Physics

Neutrino Physics / 54

Theory of neutrinos

Neutrino Physics / 55

Neutrinoless double beta decay experiments

Neutrino Physics / 56

Status and prospects of the CONUS experiment

Corresponding Author: werner.maneschg@mpi-hd.mpg.de

Neutrino Physics / 57

Solar Neutrinos

Neutrino Physics / 58

Heavy Neutrino Searches at hadron colliders

Neutrino Physics / 59

Neutrino oscillation parameters

Neutrino Physics / 60

Latest results from NOvA & T2K, and Hyper-K status

Neutrino Physics / 61

DUNE status

Neutrino Physics / 62

Role of neutrinos in the evolution of the universe

Corresponding Author: bdasgupta@theory.tifr.res.in

Neutrino Physics / 63

Status of the JUNO experiment

Neutrino Physics / 64

Status of ISMRAN experiment

Neutrino Physics / 65

Cosmic neutrinos at IceCube

Kaon Physics / 66

Precision Measurements and Prospects with Kaons at CERN

Corresponding Author: zdenko.hives@cern.ch

Kaon Physics / 67

KOTO: status and future prospects

Corresponding Author: tadashi.nomura@kek.jp

Kaon Physics / 68

Measurements and prospects for KS decays at LHCb

Corresponding Author: lgarciam@cern.ch

69

SM predictions

70

BSM models

Hot Topic 1 / 71

Hot topics from Belle II

Corresponding Author: libby@iitm.ac.in

Hot Topic 2 / 72

Hot topics from LHCb

Precision Lepton Measurements / 73

Theory of LFV

Corresponding Author: paride.paradisi@pd.infn.it

Precision Lepton Measurements / 74

LFV in B and D decays

Precision Lepton Measurements / 75

New LFV results from e^+e^- colliders

Precision Lepton Measurements / 76

Results on LFV and LFUV at LHC

Corresponding Author: dvij.mankad@weizmann.ac.il

CKM Matrix / 77

Study of charged current decays at LHCb

Corresponding Author: amathad@cern.ch

CKM Matrix / 78

LFU tests and searches for new physics in charged current decays at Belle II

Corresponding Author: junkerkalefeld@physik.uni-bonn.de

CKM Matrix / 79

Extraction of $|V_{ub}|$ and $|V_{cb}|$ @ B-factories

CKM Matrix / 80

Extraction of $|V_{cd}|$ and $|V_{cs}|$ @ BESIII

Precision Lepton Measurements / 81

Theory of $g-2$

Corresponding Author: hoferichter@itp.unibe.ch

Precision Lepton Measurements / 82

JPARC $g-2$ /EDM preparations and prospects

Precision Lepton Measurements / 83

EDM searches for leptons and hadrons

Prof. PRETZ, Joerg ¹

¹ *Forschungszentrum Juelich/RWTH Aachen University*

Corresponding Author: pretz@physik.rwth-aachen.de

Precision Lepton Measurements / 84

Tests of LFV with muons

Corresponding Author: degerone@ge.infn.it

Precision Lepton Measurements / 85

Fermilab $g-2$ results and plans

CP Violation / 86

CKM angle γ including BESIII inputs

Corresponding Author: resmipk@physics.iitm.ac.in

CP Violation / 87

CP violation in charmless B decays

Spectroscopy / 88

Study of pentaquark with heavy flavour quark-antiquark pair

Spectroscopy / 89

Recent spectroscopy results from BESIII

Spectroscopy / 90

Recent spectroscopy results from Belle II

Corresponding Author: renu2@andrew.cmu.edu

Spectroscopy / 91

Recent spectroscopy results from LHCb

Corresponding Author: p.dargent@cern.ch

Spectroscopy / 92

Spectroscopy results from ATLAS and CMS

Spectroscopy / 93

Spectroscopy results from ALICE

Corresponding Author: sonali.padhan@cern.ch

Spectroscopy / 94

Recent spectroscopy highlights from COMPASS

Corresponding Author: henri.pekeler@cern.ch

Rare Decays / 95

Theory overview of rare decays

Top Quark Physics / 96

Highlights on $t\bar{t}$ and single top cross section measurements and mass (inc. EFT)

Corresponding Author: javier.brochero@cern.ch

Top Quark Physics / 97

SMEFT implications for flavour physics

Top Quark Physics / 98

Four tops, SM and BSM (inc. EFT)

Top Quark Physics / 99

Searches for FCNC, LFV, LI violation and anomalous couplings (inc EFT)

CKM Matrix / 100

EFT for charged current decay

CKM Matrix / 101

Anomalies in B-meson decays

Corresponding Author: bbhattach@ltu.edu

Spectroscopy / 102

Prospects of spectroscopy at STCF

Rare Decays / 103

Angular analyses of rare decays at LHC

Rare Decays / 104

Measurements of very rare processes at LHCb

Rare Decays / 105

Rare decays from Belle and Belle II

Rare Decays / 106

Experimental review of rare charm decays

CP Violation / 107

Theory of CP violation

Corresponding Author: eleftheria.malami@uni-siegen.de

CP Violation / 108

CP violation in the charm sector

Corresponding Author: carbone@bo.infn.it

CP Violation / 109

Time-dependent CP violation in B0 decays

CP Violation / 110

Time-dependent CP violation in Bs decays

CP Violation / 111

CP properties of Higgs boson interactions with tau leptons

Corresponding Author: aruna.nayak@cern.ch

Rare Decays / 112

Search for $B \rightarrow K\nu\bar{\nu}$ decays at Belle II

Corresponding Author: roberta.volpe@pg.infn.it

Rare Decays / 113

Theory of $B \rightarrow K\nu\bar{\nu}$ decays

New Experiment / 114

Belle II upgrade program

New Experiment / 115

Progress on STCF in China

New Experiment / 116

Goals and performance of LHCb Upgrade II

Corresponding Author: brij.jashal@tifr.res.in

New Experiment / 117

Flavour prospects at FCC-ee

New Experiment / 118

Flavour prospects at CEPC

CKM Matrix / 119

Truncation-independent Bayesian inference of form factors

Corresponding Author: tobitsang@yahoo.de

Kaon Physics / 120

SM predictions and BSM models

Corresponding Author: martin.gorbahn@liverpool.ac.uk

Neutrino Physics / 121

Status and perspectives of the ICARUS experiment

Corresponding Author: laura.pasqualini@bo.infn.it

Kaon Physics / 122

$K \rightarrow \mu^+\mu^-$: within and beyond the SM

Rare Decays / 123

Coffee

Poster Session / 124

Poster Session

Poster Session / 125

The study of radiative B_s decays

126

Impact of more frequent ECAL transparency corrections on Level-1 and HLT trigger rates and resolution

Poster Session / 127

Study of $B_s \rightarrow B_s^0 \Lambda^0 / B_s^0$ with recoil mass approach

Poster Session / 128

GNN based track finding for muon $g-2$ /EDM experiment at J-PARC

Poster Session / 129

Search for $B \rightarrow D^* \eta \pi$ Decays with Belle II data

Poster Session / 130

GPU based track finding for muon g-2/EDM experiment at J-PARC

Poster Session / 131

Analysis of semileptonic $B \rightarrow \rho(1260) \ell^- \bar{\nu}_\ell$ process within SMEFT approach

Poster Session / 132

Rare decays of B_s mesons

Poster Session / 133

GNN-based muon energy reconstruction for INO-ICAL

Poster Session / 134

Muon-electron elastic scattering events in INO-ICAL prototype

Poster Session / 135

Exploring the mass spectra and decay properties of all charm tetraquark

Poster Session / 136

Spin-Flavor oscillations of cosmic neutrino flux in intergalactic magnetic field

Poster Session / 137

Study of $B_c^+ \rightarrow B_c^0(*) + \pi^+$ mode at Belle

Poster Session / 138

A search for light Higgs in CMS

Poster Session / 139

Spin-parity assignment of singly charmed baryons in quark-diquark picture

140

Study of strange particle production in O+O collision at LHC energy using a multi-phase transport model

141

Constraining New Physics with Possible DM Signatures from the Study of FCNC Processes

Poster Session / 142

Indirect constraints on LEFT/HEFT Wilson coefficients from SMEFT

Poster Session / 143

Effects of quark charge screening in M1 decays of charm baryons

Poster Session / 144

Quantum Mismatch: Quantifying the Quantumness in Neutrino Oscillations

Poster Session / 145

$\langle \bar{\psi} \psi \rangle$ to vector meson form factors and semileptonic decays

Poster Session / 146

Charmonium Spectrum in a Non-Relativistic Framework

Poster Session / 147

Decay constant and leptonic decay of B_c meson

Poster Session / 148

Study of the lepton flavour violating decays $B_c \rightarrow \ell + \bar{\ell}$

Poster Session / 149

Spatial and Transverse structure of Heavy B and D-mesons

Poster Session / 150

Kinematics and Particle Identification at Very High Energy Colliders

Poster Session / 151

Spectroscopic study of strange-charmed mesons in Regge phenomenology

Poster Session / 152

Missing energy in rare B-decays in the light of GeV scale dark matter

Poster Session / 153

Masses of di-baryonic $\Xi(*) \Xi(*)$ states

Poster Session / 154

Lepton flavor universality studies in W boson decays

Poster Session / 155

Exploring Charged Lepton Flavor Violating Process involving B Mesons in SMEFT

Poster Session / 156

Precision measurements of the top quark mass and decay width using CMS experiment

CKM Matrix / 157

Extraction of $|V_{cd}|$ and $|V_{cs}|$ @ BESIII

Corresponding Author: baiciank@ihep.ac.cn

Poster Session / 158

Measurement of time-integrated raw asymmetry in $B^0 \rightarrow B_s^0 B^0 \bar{B}^0$ decay at Belle II

Poster Session / 159

Time-integrated WS-to-RS ratio of the $B^0 \rightarrow B^+ B^- B^0$ decay at Belle II

160

Study of Heavy Flavoured Baryons

Poster Session / 161

A lattice QCD study of $0(0^+)$ $\{b c u\text{-bar } d\text{-bar}\}$ tetraquark $T_{\{bc\}}$

Corresponding Author: arcradhakrishnan07@gmail.com

Welcome / 162

Welcome & Logistics

Corresponding Author: gmohanty@tifr.res.in

Closeout / 163

Best poster: GNN based track finding for muon $g-2$ /EDM experiment at J-PARC

Corresponding Author: saranyasaru2401@gmail.com

Closeout / 164

Best poster: Study of $B \rightarrow X_c \Lambda^0 K / K_S$ with recoil mass approach

Corresponding Author: ph21resch11018@iith.ac.in

Closeout / 165

Best poster: Quantum mismatch - quantifying the quantumness in neutrino oscillations

Corresponding Author: d.s.chattopadhyay@theory.tifr.res.in

Closeout / 166

Closing words

Corresponding Author: gmohanty@tifr.res.in