Higgs Potential 2025: Exploring Symmetry Breaking in Particle Physics and the Early Universe

Report of Contributions

Contribution ID: **1**   Type: **not specified**

Precise predictions for Higgs pair productions for general self-couplings

Friday, 19 December 2025 10:40 (30 minutes)

Primary author: WANG, Jian (Shandong University)

Presenter: WANG, Jian (Shandong University)

Session Classification: Higgs & related indirect BSM 2

Contribution ID: **3**   Type: **not specified**

High Reheating Temperature without Axion Domain Walls

Sunday, 21 December 2025 14:40 (20 minutes)

We investigate a cosmological scenario in which the Peccei-Quinn (PQ) symmetry remains broken in the entire history of the Universe, thereby avoiding the formation of axion strings and domain walls. Contrary to the conventional expectation, it is demonstrated that appropriately chosen scalar interactions are able to keep the PQ symmetry broken at arbitrarily high temperatures. We carefully examine the finite-temperature effective potential in a model with two PQ breaking scalar fields. The existence of flat directions plays a vital role in suppressing axion isocurvature perturbations during inflation by stabilizing a PQ field at a large field value. The viable parameter space consistent with theoretical and observational constraints is identified. Our scenario provides a minimal path for PQ symmetry breaking that addresses both the axion domain wall and isocurvature problems while permitting arbitrarily high reheating temperatures accommodating high-scale baryogenesis scenarios such as thermal leptogenesis.

Primary authors: Ms WANG, Lingyun (Wuhan University); NAKAGAWA, Shota (Tsung-Dao Lee Institute, Shanghai Jiao Tong University); WANG, Yaoduo (TDLI); Dr QIU, Yu-Cheng (Tsung-Dao Lee Institute); NAKAI, Yuichiro

Presenter: WANG, Yaoduo (TDLI)

Session Classification: Higgs & related indirect BSM 10

Contribution ID: 4   Type: **not specified**

Combination of ATLAS and CMS searches for Higgs boson pair production at 13 TeV

Sunday, 21 December 2025 14:40 (20 minutes)

Ref. ATLAS-CONF-2025-012

This note presents a combination of searches for Higgs boson pair (HH) production performed by the ATLAS and CMS Collaborations using proton-proton collision data sets recorded at $\sqrt{s} = 13$ TeV at the LHC Run 2, corresponding to integrated luminosities ranging between 126 and 140 fb^{-1}. The upper limit at the 95% confidence level on the total HH production cross section corresponds to 2.5 times the standard model (SM) prediction with an expected value of 1.7 (2.8) assuming the absence (presence) of the SM HH signal. The strength of the HH signal is measured to be $0.8^{+0.9}_{-0.7}$ relative to the SM prediction. The observed significance is found to be 1.1 standard deviations when 1.3 are expected for the SM HH signal. Constraints are set on the Higgs boson trilinear self-coupling and on the couplings of two Higgs bosons to two vector bosons, both normalized to the SM predictions and denoted as κ_λ and κ_{2V}, respectively. The observed individual constraints at the 95% confidence level are $-0.71 < \kappa_\lambda < 6.1$ and $0.73 < \kappa_{2V} < 1.3$, while the expected constraints assuming the presence of the SM HH signal are $-1.3 < \kappa_\lambda < 6.7$ and $0.66 < \kappa_{2V} < 1.4$.

Primary author: ZHOU, Baihong (Tsung-Dao Lee Institute, Shanghai Jiao Tong Univ. (CN))

Presenter: ZHOU, Baihong (Tsung-Dao Lee Institute, Shanghai Jiao Tong Univ. (CN))

Session Classification: Higgs & related indirect BSM 9

Contribution ID: 5   Type: **not specified**

Search for Dark Higgs and Triple Higgs at ATLAS

Saturday, 20 December 2025 09:15 (30 minutes)

Ref. Phys. Rev. Lett. 134 (2025) 121801
A search is performed for dark matter particles produced in association with a resonantly produced pair of b-quarks with $30 < m_{bb} < 150$ GeV using 140 fb^{-1} of proton-proton collisions at a center-of-mass energy of 13 TeV recorded by the ATLAS detector at the LHC. This signature is expected in extensions of the Standard Model predicting the production of dark matter particles, in particular those containing a dark Higgs boson s that decays into $b\bar{b}$. The highly boosted s→$b\bar{b}$ topology is reconstructed using jet reclustering and a new identification algorithm. This search places stringent constraints across regions of the dark Higgs model parameter space that satisfy the observed relic density, excluding dark Higgs bosons with masses between 30 and 150 GeV in benchmark scenarios with Z′ mediator masses up to 4.8 TeV at 95% confidence level. The result leads to the 1st ever cosmological coherent dark Higgs search at LHC.

Ref. Phys. Rev. D 111 (2025) 032006
The 1st ever search for the production of three Higgs bosons (⊠⊠⊠) at LHC has been performed in the $b\bar{b}b\bar{b}b\bar{b}$ final state is presented. The search uses 126 fb^{-1} of proton-proton collision data at √⊠ =13 TeV collected with the ATLAS detector at the Large Hadron Collider. The analysis targets both non-resonant and resonant production of ⊠⊠⊠. The resonant interpretations primarily consider a cascade decay topology of ⊠→⊠⊠→⊠⊠⊠ with masses of the new scalars ⊠ and ⊠ up to 1.5 and 1 TeV, respectively. In addition to scenarios where ⊠ is off-shell, the nonresonant interpretation includes a search for Standard Model ⊠⊠⊠ production, with limits on the trilinear and quartic Higgs self-coupling set. No evidence for ⊠⊠⊠ production is observed. An upper limit of 59 fb is set, at the 95% confidence level, on the cross section for Standard Model ⊠⊠⊠ production.

Primary author: LI, Shu (TDLI, SJTU)

Presenter: LI, Shu (TDLI, SJTU)

Session Classification: Higgs & related indirect BSM 5

Contribution ID: **6**   Type: **not specified**

EW Vacuum Decay Induced by Domain Walls in the N2HDM

Sunday, 21 December 2025 14:20 (20 minutes)

The Next-to-Two-Higgs-Doublet model (N2HDM) has a rich vacuum structure where multiple electroweak (EW) breaking minima, as well as CP and electric-charge breaking minima, can coexist. These minima can be deeper than the electroweak vacuum $v \approx 246$ GeV of our universe, making our vacuum metastable. In such a case, one needs to calculate the tunneling rate from the EW vacuum to the deeper minimum. If the decay rate is larger than the universe's age, our vacuum is deemed long-lived, and the parameter point is in principle allowed. If the decay rate is smaller than the universe's age, then our vacuum is unstable and the parameter point is ruled out. However, domain walls (DW) in the N2HDM can substantially alter this picture. We show in this work that inside the DW, the barrier between our electroweak minimum and the deeper minimum can disappear, leading the scalar fields to classically roll over to the deeper minimum that nucleates inside the DW and then expands outside of it everywhere in the universe. We show that such behavior can happen to parameter points where the lifetime of our vacuum is several orders of magnitude larger than the age of the universe, making these parameter points with very long-lived EW minimum ruled out.

Primary author: SASSI, Mohamed Younes (TDLI, Shanghai Jiao Tong University)

Co-author: MOORTGAT-PICK, Gudrid (Uni Hamburg, DESY)

Presenter: SASSI, Mohamed Younes (TDLI, Shanghai Jiao Tong University)

Session Classification: Higgs & related indirect BSM 10

Contribution ID: 7 Type: **not specified**

Pati-Salam model spontaneously broken by Higgs fields in fundamental representations

Sunday, 21 December 2025 14:00 (20 minutes)

We present a supersymmetric Pati-Salam model with small representations as a potential candidate for physics beyond the Standard Model. The model features a Higgs sector with bifundamental fields $H_R + \bar{H}_R = (4,1,2) + (\bar{4},1,2)$, $H_L + \bar{H}_L = (4,2,1) + (\bar{4},2,1)$ as well as a pair of bi-doublet fields $h_a = (1,2,2)$ where $a = 1,2$, with three families of fermions accommodated in $(4,2,1) + (\bar{4},1,2)$ as usual. The matter spectrum is augmented with three copies of neutral singlets that mix with ordinary neutrinos to realize the seesaw mechanism. The model introduces supersymmetric R-symmetry and a global discrete $\mathbb{Z}_n$ symmetry ($n > 2$) that prevents disastrous superpotential couplings, while its spontaneous breaking implies the existence of domain walls that are successfully addressed. Interestingly, the one-loop beta coefficient of the $SU(4)_C$ gauge coupling is zero in the minimal $\mathbb{Z}_3$ model, rendering the corresponding gauge coupling near-conformal in the UV. Meanwhile, Landau poles are avoided up to the Planck scale and proton decay is suppressed, resulting in a proton lifetime beyond current experimental bounds. By virtue of the extended Higgs sector, the key advantage of this PS model is its ability to disentangle quark and lepton masses through higher-dimensional effective operators, addressing a common limitation in GUT models with small Higgs representations. This makes the model more economical and easier to be constructed from string theory, particularly in several heterotic and F-theory models where Higgses in the adjoint representation are absent.

Primary author: OUYANG, Ruiwen (HIAS, UCAS)

Presenter: OUYANG, Ruiwen (HIAS, UCAS)

Session Classification: Special Session of Higgs Cosomology and GUT

Contribution ID: **8** Type: **not specified**

Domain walls beyond Z2

Sunday, 21 December 2025 09:45 (30 minutes)

Domain walls (DWs) are topological defects arising from spontaneous breaking of discrete symmetries. The DW property is determined by both the symmetry and potential of the new Higgs which triggers the symmetry breaking. While most phenomenological studies on GWs from DWs focus on those from Z2 breaking, I will extend to those beyond Z2. The latter are widely predicted in, e.g., flavour symmetries in quark or lepton sectors, remnant discrete symmetries from the breaking of Peccei-Quinn symmetry, etc. In this talk, after a brief review of Z2 DW, I will discuss the properties of DWs from general ZN breaking with N an integer, referring to Abelian DWs. Then, I will move to non-Abelian DWs, namely, DWs arising from non-Abelian discrete symmetry breaking. I will focus on the widely studied octahedral symmetry S4 and tetrahedral symmetry A4. I will also discuss on gravitational waves related to these DWs, in particular their differences from the that from Z2 DWs

Primary author: ZHOU, Ye-Ling (HIAS-UCAS)

Presenter: ZHOU, Ye-Ling (HIAS-UCAS)

Session Classification: Special Session of Higgs Cosmology I

Contribution ID: **9**   Type: **not specified**

The scalar sector and lepton Yukawa sector in CP4 3HDM

Sunday, 21 December 2025 15:40 (20 minutes)

CP4 3HDM is a three-Higgs-doublet model based on the CP symmetry of order 4 (CP4) without any accidental symmetries. When exploring the scalar and Yukawa sector phenomenon of this model, the usual scan procedure is computationally time-consuming and inefficient. A much better scanning procedure, which we call the inversion, is to identify a set of crucial physical observables, to use them as input parameters, and to reconstruct the coefficients in the potential and Yukawa matrix. In this work, we construct inversion in the scalar sector and lepton Yukawa sector of CP4 3HDM. Furthermore, we investigate two lepton flavor violation (LFV) processes, the leptonic decay of the SM-like Higgs boson and the radiative decay of the muon, and use these processes to constrain the lepton Yukawa sector of the model.

Primary author: LIU, Bei (Sun Yat-Sen University)

Presenter: LIU, Bei (Sun Yat-Sen University)

Session Classification: Higgs & related indirect BSM 10

Contribution ID: **10**   Type: **not specified**

Constraining long-lived particles from Higgs boson decays at the LHC with displaced vertices and jets

Sunday, 21 December 2025 14:00 (20 minutes)

Long-lived particles (LLPs) originating from decays of Standard-Model-like or beyond-the-Standard-Model Higgs bosons are often featured with signatures of displaced vertices (DVs) and jets at colliders. In this work, we show that a recent ATLAS search for DVs plus jets, with its recast implementation, can efficiently place bounds on such hadronically or semileptonically decaying LLPs. In particular, we find the search is uniquely sensitive to LLP proper decay lengths of about 1-100 mm, probing complementary regions in the parameter space of the relevant models compared to other prompt and LLP searches.

Primary author: WANG (王), Zeren Simon (泽人) (Hefei University of Technology)

Presenter: WANG (王), Zeren Simon (泽人) (Hefei University of Technology)

Session Classification: Higgs & related indirect BSM 9

Contribution ID: **11**   Type: **not specified**

Cosmological phase transitions with low nucleation rates

Sunday, 21 December 2025 17:20 (30 minutes)

Cosmological phase transitions played a crucial role in shaping the early universe. This talk explores non-standard first-order transitions with extremely low nucleation rates, highlighting two novel possibilities: transitions completing with super-Hubble bubble separation, and bubble-free transitions driven by collapsing domain-wall structures. These scenarios lead to distinctive cosmological signatures—including primordial black holes, topological-defect dynamics, and unconventional gravitational-wave spectra—broadening the landscape of testable early-universe physics.

Primary author: JIANG, Yun

Presenter: JIANG, Yun

Session Classification: Special Session of Higgs Cosmology III

Contribution ID: **12**   Type: **not specified**

Frontier of Multi-loop Feynman Integrals and Scattering Amplitudes

Saturday, 20 December 2025 11:00 (30 minutes)

In this talk, we present our recent work at the frontier of multi-loop Feynman integrals and scattering amplitudes for precision physics. We have analytically computed two-loop six-point and three-loop five-point integrals, which represent the current state of the art in analytic Feynman integrals. Using these results and new reduction tools based on algebraic geometry, we have calculated the full-color two-loop QCD corrections for Higgs boson production in association with a bottom quark pair.

Primary author: ZHANG, Yang (University of Science and Technology of China)

Presenter: ZHANG, Yang (University of Science and Technology of China)

Session Classification: Higgs & related indirect BSM 6

Contribution ID: **13**   Type: **not specified**

Positivity bounds and dark matter direct detection bounds of Higgs interaction

Sunday, 21 December 2025 14:00 (20 minutes)

We derive a set of linear UV unitarity conditions that go beyond positivity and are easy to implement in an optimization scheme with dispersion relations in a multi-field EFT. We apply it to Higgs self scattering and compare the newly obtained upper bounds with the traditional perturbative unitarity bounds from within the EFT, and discuss some phenomenological implications of the two-sided positivity bounds in the context of experimental probes of Vector Boson Scattering. We also compute the direct detection cross section of TeV WIMPs, using current experimental limits to constrain the interaction of Higgs and WIMP dark matter.

Primary authors: CHEN, Qing (Anhui University of Science and Technology); ZHOU, Shuang-Yong (University of Science and Technology of China)

Presenter: CHEN, Qing (Anhui University of Science and Technology)

Session Classification: Higgs & related indirect BSM 10

Contribution ID: **14** Type: **not specified**

Multiboson measurements and new physics searches

Friday, 19 December 2025 08:30 (30 minutes)

Some recent progresses will be introduced from the LHC CMS experiment on multi-boson physics, including, e.g., studying anomalous couplings from Same-Sign WWH, probing boosted Higgs through the WW decay channel, and searching for diboson resonances such as Higgs plus a photon.

Primary author: LI, Qiang (Peking University)

Presenter: LI, Qiang (Peking University)

Session Classification: Higgs & related indirect BSM 1

Contribution ID: **15**   Type: **not specified**

Highlights of the HL-LHC physics projections by ATLAS and CMS

Friday, 19 December 2025 14:15 (30 minutes)

The ATLAS and CMS experiments are unique drivers of our fundamental understanding of nature at the energy frontier. In this contribution to the update of the European Strategy for Particle Physics, we update the physics reach of these experiments at the High-Luminosity LHC (HL-LHC) in a few key areas where they will dominate the state-of-the-art for decades to come.

Primary author: ZHOU, Chen (Peking University)

Presenter: ZHOU, Chen (Peking University)

Session Classification: Higgs & related indirect BSM 3

Contribution ID: **16** Type: **not specified**

The quest to close the gaps in LLPs searches in the Higgs sector

Friday, 19 December 2025 10:00 (30 minutes)

Higgs decaying to LLPs is an important part of the LLP search. In the past decade, ATLAS has established a comprehensive search programme covering a wide range of lifetimes. Due to the reconstruction and triggering challenges, dedicated analysis strategies have to be crafted, often resulting in analyses optimised for a very particular phase space. I will give a chronical review of how ATLAS managed to close the gaps gradually in LLP searches and standardise the LLP searches.

Primary author: LIU, Bingxuan (Shenzhen Campus of Sun Yat-sen University)

Presenter: LIU, Bingxuan (Shenzhen Campus of Sun Yat-sen University)

Session Classification: Higgs & related indirect BSM 1

Contribution ID: **17** Type: **not specified**

Higgs rare and exotic decays at CMS

Sunday, 21 December 2025 14:20 (20 minutes)

This talk presents the latest results from the CMS experiment on rare and exotic decays of the Higgs boson, which serve as crucial portals to physics beyond the Standard Model (BSM). Key highlights include the first evidence of the H→µµ decay, probing the second-generation Yukawa coupling, and the H→Zγ decay, with a combined significance of 3.4σ. Searches for H→c$\bar{\text{c}}$, decays to mesons, invisible decays, and exotic decays such as H→aa→4e are also discussed, showcasing advanced analysis techniques including graph neural networks. All results are consistent with Standard Model predictions so far. With ongoing Run-3 data collection and future HL-LHC operations, the sensitivity to these rare processes is expected to improve significantly.

Primary authors: ZHOU, Chen (Peking University); 张, 铭滔 (北京大学)

Presenter: 张, 铭滔 (北京大学)

Session Classification: Higgs & related indirect BSM 9

Contribution ID: **19** Type: **not specified**

Winner take all qT slicing with multiple jets and hadrons

Saturday, 20 December 2025 12:00 (30 minutes)

Modern collider phenomenology requires unprecedented precision for the theoretical predictions, for which slicing techniques provide an essential tool at next-to-next-to-leading order (NNLO) in the strong coupling. The most popular slicing variable is based on the transverse momentum qT of a color-singlet final state, but its generalization to final states with jets is known to be very difficult. Here we propose two generalizations of qT that can be used for jet processes, providing proof of concept with an NLO slicing for pp → 2 jets. We present factorization formulae that enable our approach to NNLO, calculate the NNLO collinear-soft function and demonstrate slicing at this order for e+e− → 2 jets. One of these generalizations of qT only applies to planar Born processes, such as pp → 2 jets, but offers a dramatic simplification of the soft function. We also discuss how
our approach can directly be extended to obtain predictions for the fragmentation of hadrons. This presents a promising path for high-precision QCD calculations with multi-jet final states.

Primary author: SHAO, Dingyu

Presenter: SHAO, Dingyu

Session Classification: Higgs & related indirect BSM 6

Contribution ID: **20**   Type: **not specified**

Charge-breaking opportunities for the early Universe

Sunday, 21 December 2025 16:20 (30 minutes)

The hot early Universe must have evolved through phase transitions around the electroweak epoch. In multi-Higgs models, this evolution could be much more intricate than a single-step EWPT. In this talk, I will discuss a peculiar regime in the two-Higgs-doublet model, in which thermal evolution of the early Universe passes through an intermediate phase with a charge-breaking vacuum. Remarkably, this regime is realized in a specific part of the parameter space that can be tested at colliders. I will also argue that multi-Higgs-doublet models allow for a different type of phase transitions, with two neutral minima separated by a charge-breaking bubble wall. This intriguing evolution scenario remains largely unexplored.

Primary author: Prof. IVANOV, Igor (Sun Yat-sen University)

Presenter: Prof. IVANOV, Igor (Sun Yat-sen University)

Session Classification: Special Session of Higgs Cosmology III

Contribution ID: **21**
Type: **not specified**

Search for the dimuon decay of the Higgs boson with the ATLAS detector

ATLAS and CMS experiments have confirmed Higgs boson's role in giving mass to the weak bosons and 3rd generation charged fermions. However, whether the other generations of fermions acquire mass through the same mechanism remains an open question. The Higgs boson's decay to a pair of muons provides a direct probe of its Yukawa coupling to second-generation fermions. In this talk, I will presents the newest results from the ATLAS experiment based on proton-proton collision data collected in LHC Run 3 during 2022~2024, and the combination with the Run 2 results, incorporating several improvements. This measurement significantly enhance the sensitivity over previous ATLAS publications, provides the first evidence for the H \to \mu\mu decay by the ATLAS experiment and marks a significant step toward understanding the origin of mass for the 2nd generation fermions.

Primary author: MUSAJAN, Ehsan (University of Science and Technology of China)

Presenter: MUSAJAN, Ehsan (University of Science and Technology of China)

Session Classification: Higgs & related indirect BSM 9

Contribution ID: **22**   Type: **not specified**

Implications of symmetry non-restoration in the early universe

Sunday, 21 December 2025 11:00 (30 minutes)

In this talk, I will present the physics induced by the electroweak symmetry non-restoration (ESNR) in the early universe. I will show that ESNR may trigger SU(3)_C symmetry breaking and restoration. In addition, ESNR can also trigger the Leptogenesis without requiring any B-L violation.

Primary author: CHAO, Wei (BNU)

Presenter: CHAO, Wei (BNU)

Session Classification: Special Session of Higgs Cosmology II

Contribution ID: **23** Type: **not specified**

The Minimal Supersymmetric Standard Model with Non-Invertible Selection Rules

Sunday, 21 December 2025 15:00 (20 minutes)

We investigate a framework of the Minimal Supersymmetric Standard Model (MSSM) in which the quark and lepton flavor structure and suppression of flavor-changing neutral currents (FCNCs) are governed by non-invertible selection rules. By implementing such non-group-like fusion rules for matter fields, arising from gauging the outer automorphism Z2 of a discrete ZN symmetry, we obtain realistic Yukawa textures that reproduce the observed quark and lepton masses and mixings while ensuring diagonal soft supersymmetry (SUSY) breaking masses and hence suppressing dangerous FCNC processes. We analyze mass insertion parameters under random O(1) coefficients and find that all flavor-violating effects are consistent with experimental limits on processes such as $\mu \rightarrow e\gamma$ and meson mixings. We show that the Yukawa textures and soft terms remain stable under renormalization group evolution. Our results demonstrate that non-invertible selection rules provide a compelling new mechanism to address both the flavor structure and FCNC problems in supersymmetric models.

Primary authors: OTSUKA, Hajime (Kyushu University); Dr SHIGEKAMI, Yoshihiro (Henan Normal University); NAKAI, Yuichiro; ZHANG, Zhihao (TDLI)

Presenter: ZHANG, Zhihao (TDLI)

Session Classification: Higgs & related indirect BSM 10

Contribution ID: **24**
Type: **not specified**

Probing quark-lepton correlation in GUTs with high-precision neutrino measurements

Sunday, 21 December 2025 15:20 (20 minutes)

GUTs unify quarks and leptons into same representations and predict correlations between their masses and mixing. We take new data of JUNO and perform numerical scans to explore the flavor space compatible with data in SO(10) GUTs. The quark-lepton correlation shows the preference of normal ordering for light neutrino masses, predicts favored region of the CP-violating phase in neutrino oscillations, and classifies GUT models based on their testability in neutrinoless double beta decay experiments. The quark-lepton correlation predicts mass spectrum of right-handed neutrinos, pointing to the energy scale of baryon and lepton number violation and providing sources for baryogenesis. We emphasize that, as the high precision measurements of neutrino physics is coming, the quark-lepton correlation will provide increasingly important role in the testability of GUTs, complementary to the proton decay measurement.

Primary author: FANG, Gao-Xiang (HIAS, UCAS, Hangzhou)

Co-authors: Prof. ZHOU, Ye-Ling (School of Fundamental Physics and Mathematical Sciences, Hangzhou Institute for Advanced Study, UCAS); Dr CHEN, Zi-Qiang (HIAS,UCAS,Hangzhou)

Presenter: FANG, Gao-Xiang (HIAS, UCAS, Hangzhou)

Session Classification: Special Session of Higgs Cosomology and GUT

Contribution ID: **25**   Type: **not specified**

Cosmological and gravitational-wave phenomenology of phase transitions

Sunday, 21 December 2025 09:15 (30 minutes)

I will introduce cosmological and gravitational-wave aspects of phase-transition phenomenology, including bubble nucleation and expansion dynamics, gravitational-wave generations, curvature perturbations, primordial black holes, and, in particular, the induced gravitational waves from primordial gravitational collapse at non-linear and non-perturbative levels.

Primary author: WANG, Shao-Jiang (Institute of Theoretical Physics, Chinese Academy of Sciences)

Presenter: WANG, Shao-Jiang (Institute of Theoretical Physics, Chinese Academy of Sciences)

Session Classification: Special Session of Higgs Cosmology I

Contribution ID: **27** Type: **not specified**

Higgs field in cosmology

Sunday, 21 December 2025 10:30 (30 minutes)

Higgs field in cosmology

Primary author: HAN, Chengcheng (Sun Yat-sen university)

Presenter: HAN, Chengcheng (Sun Yat-sen university)

Session Classification: Special Session of Higgs Cosmology II

Contribution ID: **28** Type: **not specified**

Exotic Higgs Decay at Future Muon Colliders

Friday, 19 December 2025 11:10 (30 minutes)

In this talk we present a phenomenological search for exotic Higgs decays to light BSM particles at future muon colliders.

Primary author: LI, Lingfeng

Presenter: LI, Lingfeng

Session Classification: Higgs & related indirect BSM 2

Contribution ID: **29**   Type: **not specified**

Physical remnant of electroweak theta angles

Friday, 19 December 2025 15:50 (30 minutes)

In addition to the well-known quantum chromodynamical theta angle, we show that the Standard Model has another theta angle which is invariant under arbitrary chiral rotations of quarks and leptons. The new theta angle coincides with the quantum electrodynamical theta angle, which may be observable in a spacetime with nontrivial topology, either beyond the visible universe or in an effective background from a laboratory setup

Primary author: 孙, 铮 (四川大学)

Co-authors: Prof. BRISTER, James (四川大学); Prof. 龙, 炳蔚 (四川大学); Mr 冉, 龙杰 (四川大学); Mr 邹, 瑛培 (四川大学); Mr SHAHZAD, Muhammad (四川大学)

Presenter: 孙, 铮 (四川大学)

Session Classification: Higgs & related indirect BSM 4

Contribution ID: **30**   Type: **not specified**

Exact parametrization of a minimal seesaw model

Sunday, 21 December 2025 15:00 (20 minutes)

We propose a parametrization of neutrino masses and mixing in the minimal seesaw model (MSM). The MSM, which introduces two heavy sterile neutrinos, is the minimal extension of the Standard Model in addressing the tiny masses of active neutrinos. The parametrization includes 11 free parameters: 6 neutrino oscillation parameters (2 mass-squared differences Δm_{21}^2, Δm_{31}^2, 3 mixing angles θ_{12}, θ_{13}, θ_{23}, and 1 Dirac phase δ_{CP}), 1 mass parameter in $0\nu2\beta$ decay m_{ee}, and 4 additional parameters: 2 heavy neutrino masses M_1 and M_2, 1 active-sterile mixing angle θ_{14} and 1 CP-violating phase δ_{14}. This parametrization is derived exactly from the most general neutrino mass matrix in the MSM without any approximation. We further discuss its implications in phenomenological studies.

Primary author: CHEN, Zi-Qiang (UCAS,HIAS)

Co-authors: Mr HU, Xi-He (HIAS-UCAS); ZHOU, Ye-Ling (HIAS-UCAS)

Presenter: CHEN, Zi-Qiang (UCAS,HIAS)

Session Classification: Special Session of Higgs Cosomology and GUT

Contribution ID: **31**
Type: **not specified**

Darkogenesis via Supercooled Phase Transition

Sunday, 21 December 2025 16:50 (30 minutes)

We discuss the intriguing possibility that the recently reported nano-Hz gravitational wave signal by Pulsar Timing Array (PTA) experiments is sourced by a strong first-order phase transition in a dark sector. The phase transition has to be strongly supercooled to explain the signal amplitude. However, such strong supercooling exponentially dilutes away any pre-existing baryon asymmetry and dark matter, calling for a new paradigm of their productions. We then develop a mechanism of cold darkogenesis that generates a dark asymmetry during the phase transition from the textured dark SU(2) Higgs field. This dark asymmetry is transferred to the visible sector via neutron portal interactions, resulting in the observed baryon asymmetry. Furthermore, the mechanism naturally leads to the correct abundance of asymmetric dark matter. Collider searches for mono-jets and dark matter direct detection experiments can dictate the viability of the model. We also discuss another scenario of darkogenesis where the number asymmetry is generated from the decay of a mother particle produced via parametric resonance during the phase transition induced due to its coupling to the order parameter scalar. It is shown that the correct baryon asymmetry and dark matter abundance can be realized for a dark phase transition at $O(1)$ GeV. The scenario will be tested further in neutron-antineutron oscillation experiments.

Primary author: NAKAI, Yuichiro

Presenter: NAKAI, Yuichiro

Session Classification: Special Session of Higgs Cosmology III

Contribution ID: **32** Type: **not specified**

Exploring the Landscape of Spontaneous CP Violation in Supersymmetric Theories

Sunday, 21 December 2025 15:20 (20 minutes)

The strong CP problem remains one of the most important unresolved issues in the Standard Model. Spontaneous CP violation (SCPV) is a promising approach to the problem by assuming that CP is an exact symmetry of the Lagrangian but broken spontaneously at the vacuum, which enables the generation of the observed Cabibbo-Kobayashi-Maskawa (CKM) phase without reintroducing a nonzero strong CP phase. Supersymmetry (SUSY) provides a natural framework to accommodate such a mechanism, as SUSY can not only protect the scale of SCPV from radiative corrections but also suppress problematic higher-dimensional operators generating a strong CP phase. In the present study, we explore the realization of SCPV in two distinct SUSY scenarios. First, we investigate SCPV in the exact SUSY limit, extending the spurion formalism developed in non-supersymmetric theories and introducing a method to determine whether the given superpotential satisfies the necessary condition for SCPV. Second, we construct a model in which CP is spontaneously broken at an intermediate scale along pseudo-flat directions, stabilized by soft SUSY breaking and non-perturbative effects of a gauge theory. The latter setup predicts light scalars in the SCPV sector whose masses are determined by the SUSY breaking scale.

Primary authors: LIU, Fangchao (TDLI, SJTU); NAKAGAWA, Shota (Tsung-Dao Lee Institute, Shanghai Jiao Tong University); WANG, Yaoduo (TDLI); NAKAI, Yuichiro

Presenter: LIU, Fangchao (TDLI, SJTU)

Session Classification: Higgs & related indirect BSM 10

Contribution ID: **33** Type: **not specified**

电弱相变中的规范依赖性研究

Sunday, 21 December 2025 14:20 (20 minutes)

我们将在报告中讨论有限温度场论在电弱相变研究中的规范依赖性。

Primary author: 覃, 仁晖 (重庆大学)

Presenter: 覃, 仁晖 (重庆大学)

Session Classification: Special Session of Higgs Cosomology and GUT

Contribution ID: **34** Type: **not specified**

Gauge Coupling Evolution in an SU(8) GUT

Sunday, 21 December 2025 15:40 (20 minutes)

Although the Standard Model has achieved remarkable success, its limitations motivate physicists to continuously explore new fundamental particle theories. Among the numerous candidate theories, Grand Unified Theories (GUTs) have attracted significant attention due to their simplicity and potential to unify the three fundamental interactions.

We present a detailed study of the running of gauge couplings along several gauge symmetry breaking chains (SWW, WSW, and WWS) in the SU(8) Grand Unified Theory. By relaxing the third law of grand unification proposed by H. Georgi, we obtain the left-handed fermion representation set with the minimal fermion degrees of freedom in this GUT while ensuring anomaly cancellation. Furthermore, from the perspectives of gauge symmetry and global symmetry, we determine the representations of Higgs fields and Yukawa interactions.

The massless fermion spectrum, the two-loop renormalization group equations for gauge couplings at each stage, the CKM mixing matrix, and the relationship between gauge couplings before and after symmetry breaking are derived in detail by analyzing the breaking of the group structure. We then provide benchmark points for some parameters (especially each symmetry breaking scale) based on the measured values of the CKM matrix. Using the renormalization group equations, we calculate the coupling constants at different stages and plot the coupling running diagrams.

The results show that the minimal setup of the SU(8) GUT does not achieve the unification of gauge couplings. However, introducing numerous additional Higgs fields can strengthen the coupling strength of non-Abelian groups, leading to an unnatural unification. Moreover, the $\mathcal{N} = 1$ supersymmetric extension can modify the β coefficients and achieve the unification of coupling constants within the framework of affine Lie algebra. These results provide important references for the development of GUTs and demonstrate the potential of the SU(8) GUT in unifying gauge interactions.

Primary authors: 侯, 占鹏 (华中师范大学); 滕, 召隆 (华南师范大学); Dr 陈, 宁 (南开大学); 王, 宾 (南开大学); 陈, 致远; Dr 毛, 英男 (武汉理工大学)

Presenter: 侯, 占鹏 (华中师范大学)

Session Classification: Special Session of Higgs Cosomology and GUT

Contribution ID: **35**   Type: **not specified**

Opening Speech

Friday, 19 December 2025 08:20 (10 minutes)

Presenter: Prof. ZUO （DEAN）, Wen-Long (电子科技大学)

Session Classification: Opening Speech

Contribution ID: **38** Type: **not specified**

A jet-free route to observing HH->4b

Sunday, 21 December 2025 15:20 (20 minutes)

I will present a new jet-free strategy for the $HH \rightarrow 4b$ search at the LHC that enhances sensitivity by more than a factor of five compared with current approaches. The method uses all-particle inputs to jointly identify $h_1 h_2 \rightarrow 4b$ across variable Higgs-candidate masses and to estimate (m_{h_1}, m_{h_2}) via a mass-decorrelated multiclass classifier. A key feature is that the HH response can be calibrated directly using the $ZZ \rightarrow 4b$ proxy. After validating the framework with a high-fidelity simulation workflow, we find that two experimental conditions are crucial for reaching the demonstrated performance. With Run 2+3 data, this approach puts an observation of di-Higgs production within reach and opens the door to constraints on κ_λ competitive with HL-LHC expectations. I will discuss both the methodology and its implications for redefining the LHC's search potential in di-Higgs studies.
This talk is based on arXiv:2508.15048v2.

Primary authors: LI, Congqiao (Peking University); YANG, Tianyi (Peking University)

Presenter: LI, Congqiao (Peking University)

Session Classification: Higgs & related indirect BSM 9

Contribution ID: **39** Type: **not specified**

Asymptotic Grand Unified Theories

Friday, 19 December 2025 12:10 (20 minutes)

Extra-dimensions are a very interesting tool to address various missing parts of the Standard Model of particle physics. When one extra-dimension is added, a compactification based on a orbifold is required to ensure a chiral spectrum for the fermions. It also allows mechanisms to consistently break the bulk gauge group. Symmetry breaking on orbifolds can be understood in two different ways: through the boundary conditions imposed on the fields by the orbifold structure or through the vacuum structure of the fifth component of the gauge fields, the "gauge-scalar". We will use those mechanisms to build consistent 5D GUTs. We will focus on theories featuring an asymptotic behaviour for the running of the gauge couplings, dubbed asymptotic GUTs (aGUTs).

Primary author: ISNARD, Wanda (University of Lyon 1, IP2I (France))

Presenter: ISNARD, Wanda (University of Lyon 1, IP2I (France))

Session Classification: Higgs & related indirect BSM 2

Contribution ID: **40** Type: **not specified**

Evidence for the dimuon decay of the Higgs boson at the ATLAS experiment (Lightening Talk)

Friday, 19 December 2025 14:45 (20 minutes)

This talk will present a key advancement from the ATLAS experiment in probing the rare decay of the Higgs boson to a pair of muons (H→μμ). By analysing the new proton-proton collision data from LHC Run 3 (2022-2024) and combining it with Run 2 data, incorporating several technical improvements, we have performed the most sensitive combined measurement to date. The result provides the first evidence for the H→μμ decay with a significance of 3.4σ by ATLAS, marking a significant milestone in directly probing the Yukawa coupling between the Higgs boson and second-generation fermions.

Primary authors: LIU(刘), Yanlin(彦麟); LIU, haotian

Presenter: LIU, haotian

Session Classification: Higgs & related indirect BSM 3

Contribution ID: **41** Type: **not specified**

数值模拟计算假真空衰变率的新方案

Sunday, 21 December 2025 14:40 (20 minutes)

We propose a novel approach to calculate the false vacuum decay rate, which goes beyond the saddle-point approximation when large thermal fluctuations appear. Utilizing the extension of the Wigner function in quantum field theory, we numerically calculate the decay rate of the false vacuum through functional integral. We observe that the decay rate for the thermal fluctuation scenarios and its dependence on the potential shape, and found that the false vacuum decay occurs following an exponentially decay rate, and the speed of vacuum decay decreases when the initial energy of the system decreases and the potential height increase.

Primary authors: Prof. BIAN, Ligong (Chongqing University); 王, 海洋 (重庆大学)

Co-author: 覃, 仁晖 (重庆大学)

Presenter: 王, 海洋 (重庆大学)

Session Classification: Special Session of Higgs Cosomology and GUT

Contribution ID: **42** Type: **not specified**

Positivity bounds at one-loop level

Saturday, 20 December 2025 16:30 (30 minutes)

Parameters in an effective field theory can be subject to certain positivity bounds if one requires a UV completion that obeys the fundamental principles of quantum field theory. These bounds are relatively straightforward at the tree level, but would become more obscure when loop effects are important. In this talk, I will discuss the impacts of loop contributions to the interpretation of positivity bounds, using scalar theories and Scalar QED as examples. In particular, a strict positivity bound can only be implied when all contributions at the same loop order are considered, and the one-loop generated dimension-8 operator coefficients (as well as their beta functions) may not be subject to the tree-level bounds.

Primary author: GU, Jiayin (Fudan University)

Presenter: GU, Jiayin (Fudan University)

Session Classification: Higgs & related indirect BSM 7

Contribution ID: **43** Type: **not specified**

Precision Frontier of the Higgs Boson with NNLOJET

Saturday, 20 December 2025 11:30 (30 minutes)

In this talk I would like to introduce the state-of-the-art parton level event generator NNLOJET and its application to precision phenomenology of the Higgs boson. The main theory uncertainties of the Higgs boson production at hadron collider are from the parton distribution functions and determination of the strong coupling alpha_s. We have made NNLO QCD accurate PDF grids to help improve both alpha_s and PDF fitting. For di-Higgs production at hadron colliders, we for the first time predicated fully differential cross sections at N3LO QCD accuracy and revealed detailed corrections for the shape of several differential observables. For lepton colliders, we have also studied at N3LO accuracy the Higgs hadronic decay properties. The application of the decay processes to the main ZH production channel will also be discussed.

Primary author: CHEN, Xuan (Shandong University)

Presenter: CHEN, Xuan (Shandong University)

Session Classification: Higgs & related indirect BSM 6

Contribution ID: 44 Type: **not specified**

Unveiling Light-Quark Yukawa Flavor Structure via Dihadron Fragmentation at Lepton Colliders

Sunday, 21 December 2025 12:00 (30 minutes)

Directly probing light-quark Yukawa couplings and their flavor structure remains a major challenge due to their smallness and overwhelming QCD backgrounds. In this Letter, we propose a theoretical framework to access these couplings at future lepton colliders through transverse spin dependent azimuthal modulations in dihadron fragmentation.

These modulations arise from the interference between Higgs mediated and Standard Model (SM) amplitudes in $e^- e^+ \rightarrow q\bar{q}Z$, producing angular structures that are linearly sensitive to the Yukawa couplings y_q, in contrast to conventional observables that scale as y_q^2. By combining channels with an identified accompanying single hadron, $h' = \pi^\pm, K^\pm$, and $p/\bar{p}$, this approach cleanly disentangles the up- and down-quark Yukawa contributions, yielding typical limits at the $\mathcal{O}(10^{-3})$ level and establishing fragmentation dynamics as a novel and complementary probe of the Higgs flavor structure.

Primary author: Prof. YAN, Bin (IHEP)

Presenter: Prof. YAN, Bin (IHEP)

Session Classification: Higgs & related indirect BSM 8

Contribution ID: **45**   Type: **not specified**

Confront a dilaton model with the LHC measurements

Sunday, 21 December 2025 15:40 (20 minutes)

The origin of the Higgs boson (H_{125}), discovered in 2012, remains a mystery. In the metric affine theory (MAT) framework, we study the scalar potential and investigate a couple of scenarios for the symmetry breaking mechanisms with a dilaton model which is derived from the geometry. The LHC constraints for the couplings of Yukawa couplings, Higgs-weak vector bosons and Higgs self-couplings, in this model are examined, which identify the parameter space where the discovered Higgs boson $m_h = 125$ GeV can be dilaton-dominant and the features of Higgs self-couplings are explored. It is found that via the measurements of Higgs pair production, the High Luminosity LHC (HL-LHC) running can either confirm or rule out the dilaton dominance.

Primary author: 静儿, 吴 (中国科学院大学物理科学学院)

Presenter: 静儿, 吴 (中国科学院大学物理科学学院)

Session Classification: Higgs & related indirect BSM 9

Contribution ID: **46**   Type: **not specified**

有限温度下强耦合相变：可见物质及其质量的产生 （Strongly Coupled Phase Transitions at Finite Temperature）

Thursday, 18 December 2025 14:00 (1h 30m)

本讲座以强相互作用物质相变的观点简要讨论可见物质粒子及其质量的起源，包括由其基本现象归结为相变的物理机制、强关联非微扰系统相变的判据、以及相关研究的进展现状。

Presenter: Prof. 刘, 玉鑫 (北京大学)

Session Classification: Higgs School

Contribution ID: 47   Type: **not specified**

电弱理论、希格斯机制与希格斯新物理 (Higgs Foundation and BSM)

Thursday, 18 December 2025 09:00 (1h 30m)

Presenter: PASECHNIK, Roman (Lund University)

Session Classification: Higgs School

Contribution ID: **48**   Type: **not specified**

早期宇宙相关的有限温场论 (Finite Temperature Field Theory at Early Universe)

Thursday, 18 December 2025 10:45 (1h 30m)

Presenter: BITTAR, Pedro (Perimeter Insitute)

Session Classification: Higgs School

Contribution ID: **51**   Type: **not specified**

希格斯宇宙学 (Non-decoupling Effect on the Higgs Potential and its Application)

Thursday, 18 December 2025 15:45 (1h 30m)

Presenter: KANEMURA, Shinya (Osaka University)

Session Classification: Higgs School

Contribution ID: **52** Type: **not specified**

Searching for the CEP of QCD Phase Transition

Saturday, 20 December 2025 13:45 (30 minutes)

Presenter: 刘, 玉鑫 (北京大学)

Session Classification: Special Session of Strongly Coupled Theory

Contribution ID: **53** Type: **not specified**

QCD cosmology: GWs and primordial quark star

Saturday, 20 December 2025 14:45 (30 minutes)

Presenter: HUANG, Mei (University of Chinese Academy of Sciences(UCAS))

Session Classification: Special Session of Strongly Coupled Theory

Contribution ID: **54** Type: **not specified**

Mapping the QCD Phase Diagram: Insights from Lattice QCD

Saturday, 20 December 2025 14:15 (30 minutes)

Presenter: DING, Heng-Tong (Central China Normal University)

Session Classification: Special Session of Strongly Coupled Theory

Contribution ID: **56** Type: **not specified**

Future High Energy Accelerators - Possibilities and Paths

Saturday, 20 December 2025 08:15 (30 minutes)

Presenter: LOU, Xinchou (IHEP)

Session Classification: Higgs & related indirect BSM 5

Contribution ID: 57 Type: **not specified**

New physics searches with PandaX experiment

Saturday, 20 December 2025 08:45 (30 minutes)

Presenter: ZHOU, Ning (Shanghai Jiao Tong University)

Session Classification: Higgs & related indirect BSM 5

Contribution ID: **58** Type: **not specified**

Finite temperature theory calculation

Friday, 19 December 2025 11:40 (30 minutes)

Presenter: BITTAR, Pedro (Perimeter Insitute)

Session Classification: Higgs & related indirect BSM 2

Contribution ID: 59 Type: **not specified**

Improved sensitivities of low-energy U(1)_{B-L} model at DUNE and FASER

Friday, 19 December 2025 15:20 (30 minutes)

Presenter: ZHANG, Yongchao (Southeast University)

Session Classification: Higgs & related indirect BSM 4

Contribution ID: **60** Type: **not specified**

Exploration of the Higgs Potential @ LHC

Friday, 19 December 2025 13:45 (30 minutes)

Presenter: HUANG, Yanping (IHEP)

Session Classification: Higgs & related indirect BSM 3

Contribution ID: **61** Type: **not specified**

Higgs Physics at CMS

Friday, 19 December 2025 09:30 (30 minutes)

该报告介绍最近 cms 实验上的希格斯物理方面的最新进展。

Presenter: XIAO, Meng (Zhejiang university)

Session Classification: Higgs & related indirect BSM 1

Contribution ID: **63** Type: **not specified**

希格斯科普报告

Friday, 19 December 2025 16:30 (1h 30m)

Presenter: CAO, Qing-Hong (Peking University)

Session Classification: 希格斯科普报告

Contribution ID: **64** Type: **not specified**

Constructive Massive Amplitudes In light of Electroweak Symmetry Breaking

Saturday, 20 December 2025 10:30 (30 minutes)

Presenter: YU, Jiang-Hao

Session Classification: Higgs & related indirect BSM 6

Contribution ID: **65** Type: **not specified**

CEPC Physics and AI usage

Saturday, 20 December 2025 09:45 (30 minutes)

Presenter: RUAN, Manqi (Institute of High Energy Physics, Beijing, China)

Session Classification: Higgs & related indirect BSM 5

Contribution ID: **66** Type: **not specified**

Confining dark gauge sectors, glueball axion-like particles and Yang-Mills Cosmology

Saturday, 20 December 2025 15:15 (30 minutes)

Presenter: PASECHNIK, Roman (Lund University)

Session Classification: Special Session of Strongly Coupled Theory

Contribution ID: **68** Type: **not specified**

Electroweak Baryogenesis in the two Higgs doublet model without EDM cancellation

Saturday, 20 December 2025 16:00 (30 minutes)

Presenter: KANEMURA, Shinya (Osaka University)

Session Classification: Higgs & related indirect BSM 7

Contribution ID: **69** Type: **not specified**

GW-Collider interface

Sunday, 21 December 2025 08:15 (30 minutes)

Presenter: RAMSEY-MUSOLF, Michael (TDLI-SJTU)

Session Classification: Special Session of Higgs Cosmology I

Contribution ID: **70** Type: **not specified**

Bridging the MeV-Gap for Light Higgs Portal Dark Matter

Sunday, 21 December 2025 08:45 (30 minutes)

We explore the surviving parameter space for sub-GeV thermal Dark Matter (DM) within Higgs-portal models, analyzing both a minimal Majorana DM scenario with a singlet scalar mediator and leptophilic DM scenarios. These light DM candidates face severe constraints from the observed relic density, Cosmic Microwave Background (CMB) measurements, and direct detection experiments. Our comprehensive analysis shows that the introduction of pseudo-scalar or leptophilic couplings is critical to evade stringent direct detection limits. Crucially, we identify the mediator resonance region as a distinct and robust parameter space that simultaneously satisfies all cosmological and direct detection constraints. This resonance mechanism provides a natural "sweet spot" that is uniquely accessible to next-generation indirect detection missions. We demonstrate that future MeV-GeV gamma-ray telescopes, such as e-ASTROGAM and the Very Large Area Space Telescope (VLAST), offer unprecedented sensitivity to definitively probe and test this key surviving region, thereby bridging the long-standing "MeV Gap" in DM searches.

Presenter: TSAI, Yue-Lin Sming (Purple Mountain Observatory)

Session Classification: Special Session of Higgs Cosmology I

Contribution ID: **71** Type: **not specified**

Quantum Entanglement at Higgs Factory

Sunday, 21 December 2025 11:30 (30 minutes)

In this talk, we will discuss the potential of investigating quantum entanglement effects at Higgs factory.

Presenter: ZHANG, Hao (Theoretical Physics Division, Institute of High Energy Physics, Chinese Academy of Sciences)

Session Classification: Higgs & related indirect BSM 8

Contribution ID: **72**   Type: **not specified**

Illuminating the Dark: Bridging Higgs Physics and Dark Matter at Colliders

Friday, 19 December 2025 09:00 (30 minutes)

The discovery of the Higgs boson has opened a new window into physics beyond the Standard Model. In this talk, I will discuss how the Higgs serves as a unique tool to probe the Dark Sector. I will cover three complementary strategies: constraining Dark Matter models via precision Higgs coupling measurements, performing direct Higgs portal searches, and exploring extended Higgs sectors that could bridge the visible and BSM.

Primary author: WANG, Zirui (Fudan University (CN))

Presenter: WANG, Zirui (Fudan University (CN))

Session Classification: Higgs & related indirect BSM 1

Contribution ID: **73**   Type: **not specified**

Recent Progress in Single Top-Higgs (tH) Production with the ATLAS detector

Sunday, 21 December 2025 15:00 (20 minutes)

Recent measurements of single top-Higgs (tH) production at the LHC show consistent excesses above Standard Model predictions across multiple decay channels. While still statistically limited, these observations are intriguing given tH's unique sensitivity to the relative sign between top Yukawa and W boson couplings. This talk summarizes the current experimental landscape, and ongoing dedicated tH analyses and combination efforts.

Primary authors: MUSAJAN, Ehsan (University of Science and Technology of China);   YANG, Hongtao (USTC)

Presenter: MUSAJAN, Ehsan (University of Science and Technology of China)

Session Classification: Higgs & related indirect BSM 9