Abstract submission

ILD regularly submits abstracts to conferences on ILD and ILD related topics. Please find here a list of recently submitted abstracts, and their status. Once accepted as talks, you will find them under "talks".

Submitted abstracts

W: working
S: submitted
A: accepted
R: rejected

Number	Conference	Title/abstract	submitted on	Status
40	ICHEP	**ILD, a Detector for the International Linear Collider** The International Large Detector (ILD) is a detector designed primarily for the International Linear Collider (ILC), a high-luminosity linear electron-positron collider with an initial center-of-mass energy of 250 GeV, extendable to 1 TeV. The ILD concept is based on particle flow for overall event reconstruction, which requests outstanding detector capabilities including superb tracking, very precise detection of secondary vertices and high-granularity calorimetry. In the past years the ILD design has focused on building subdectector technological prototypes scalable to the full ILD size, studying their integration into a coherent detector, benchmarking the ILD performance and preparing for an optimization of the overall ILD size and costing. The current status has recently been made public in an ILD Interim Design Report (IDR) of interest for any future e+e- collider detector. The presentation will summarize the main IDR results and the plans to prepare a technical proposal for a detector at the ILC, should ILC move forward.	25 Feb 2020 Track 13. Detectors for Future Facilities (incl. HL-LHC), R&D, Novel Techniques Abstract #766	A
39	ICHEP	**Heavy quark production in high energy electron positron collisions** The process ee->qq with qq=cc,bb,tt plays a central role in the physics programs of high energy electron-positron colliders. Polarised beams as available at the international collider ILC are an essential input for the complete measurement of the helicity amplitudes that govern the production cross section. Heavy quarks are likely messengers to new physics and at the same time they are ideal benchmark processes for detector optimisation. All three processes call for superb primary and secondary vertex measurements and a high tracking efficiency to correctly measure the vertex charge. Charm and bottom production are already available below the ttbar threshold. The program must be completed by the measurement of electroweak ttbar production. We will show with detailed detector simulations of the ILD Detector that production rate and the forward backward asymmetries of the three processes can be measured at the 0.1% - 0.5% level and how systematic errors can be controlled to reach this level of accuracy. The discovery potential in terms of Randall-Sundrum models with warped extra dimensions will be outlined.	25 Feb 2020 Track 04. Top Quark and Electroweak Physics Abstract #767	A
38	ICHEP	**Improving Electroweak Precision Observables Including m_W, Γ_W, A_{LR} and TGCs with the ILD Detector** We discuss the improvements that the ILC can make in precision electroweak observables based on studies with the ILD detector concept. These include observables from WW production and radiative return to the Z at a centre of mass energy of 250 GeV, and from a dedicated stage of running at the Z pole. These improvements take advantage of the ILC capabilities for polarized electron and positron beams, and an accelerator design that accommodates data-taking at a wide range of beam energies. We also present new results on precision measurements of fermion pair production. The studies include experimental considerations evaluated in the context of the ILD detector concept and discussion of experimental strategies targeted at controlling relevant systematic uncertainties.	25 Feb 2020 Track 04. Top Quark and Electroweak Physics Abstract #768	A
37	ICHEP	**ILC as a SUSY discovery and precision instrument.** Data from the LHC at 7, 8, and 13 TeV have so far yielded no evidence for new particles beyond the 125 GeV Higgs boson; in particular, there have been no signs of SUSY. However, the complementary nature of physics with e+e- collisions still offers many interesting scenarios in which SUSY can be discovered at the ILC. These scenarios take advantage of the capability of e+e- collisions to observe events with missing four-momentum - a signature not available at hadron colliders, where only transverse imbalance is observable. Due to low backgrounds and trigger-less operation, detectors at e+e- colliders can observe events with much less visible energy than what is possible at hadron colliders. In this contribution, we will present detailed simulation studies done with the ILD concept at the ILC. These studies include simulation of the full SM background, as well as realistic accelerator conditions. We will show results both on expected discovery and exclusion reaches for the most challenging SUSY channels, such as higgsinos or winos at low mass differences. Evaluations of precision of model-parameter measurements, in case of discovery, will also be given. We also report on how such measurements can be used to put constraints on parts of the sparticle-spectrum beyond direct reach, and to discriminate between different models of SUSY breaking at high scales.	25 Feb 2020 Track 03. Beyond the Standard Model Abstract #769	A
36	ICHEP	**The ILD Software Tools and Detector Performance** The ILD detector is a detector concept designed for high precision physics at the ILC. It is optimized for particle flow event reconstruction with extremely precise tracking capabilities and highly granular calorimeters. Over the last decade ILD has developed a suite of sophisticated software components for simulation and reconstruction in the context of the iLCSoft ecosystem in collaboration with other future collider projects. We will present an overview of the ILD software from the detailed and realistic modeling of the detector with DD4hep, over the event reconstruction algorithms with its pattern recognition and particle flow algorithms to the high level reconstruction for flavor tagging and particle identification. Most of the these tools have been developed in a detector agnostic way and are also applicable to other future lepton colliders. Finally we will present an overview of the resulting detector performance that can be achieved with ILD following the ILD Interim Design Report (IDR) that recently has been made public.	25 Feb 2020 Track 14. Computing and Data Handling Abstract #770	A
35	Higgs Couplings 2019, Oxford	**Study of Z coupling at the ILC** In the Standard Model, Z coupling is a loop induced coupling, therefore it might receive relatively large correction from BSM physics. In the SM Effective Field Theory, the measurement of HZ coupling can provide a very useful constraint that helps the global fit, in particular the precise determination of HZZ and HWW couplings. At the ILC, there are two direct ways to study HZ coupling: measuring the decay branching ratio of H->Z, or measuring the production cross section of e+e- -> H. In this talk, we will introduce the full simulation studies using these two ways, based on the detector model ILD at the ILC. Results will be given for an integrated luminosity of 2 ab-1 at ECM=250 GeV.	23.07.2019	A
34	Higgs Couplings 2019, Oxford	**Electroweak precision observables for the Higgs Coupling determination at the ILC** Very generically the same BSM physics that modifies Higgs couplings can also modify other electroweak couplings. A concrete example is given about the contact interaction operators in the Standard Model Effective Field Theory. In this respect, the electroweak precision observables (EWPOs) such as A_l (left right asymmetry in electron Z coupling) and Gam_l (partial width of Z to leptons) turn out to be very useful for the Higgs coupling determination. ILC can improve the EWPOs in at least two ways: by radiative return process or by a dedicated Z-pole running (Giga-Z option). In both ways, the beam polarizations play a very important role. This talk will give current prospects of improving the EWPOs at the ILC.	23.07.2019	A
33	DPF2019, Boston	**ILD for the International Linear Collider** The International Large Detector (ILD) is a detector concept for the International Linear Collider (ILC), a high-luminosity linear electron-positron collider with an initial center-of-mass energy of 250 GeV (extendable to 1 TeV). The ILD is optimized with the concept of particle flow for overall event reconstruction so that it will deliver excellent performance for high-precision Higgs and top measurements, as well as high-sensitivities for possible new phenomena, utilizing the advantages of an electron-positron collider. Particle flow implies that all particles in an event, charged and neutral, are individually reconstructed. This requirement has a large impact on the design of the detector, and has played a central role in the optimisation of the system. Superb tracking capabilities and outstanding detection of secondary vertices are other important aspects. The overall layout, sub-detector technologies, expected performance, and recent progress of the ILD will be presented.	09.05.2019	A

32	Lepton-Photon 2019 Toronto	**Probing the dark sector via searches for invisible decays of the Higgs boson at the ILC** To unravel the nature of dark matter is one of the most important goals in particle physics today. The Higgs field may well be the portal that couples to a whole new dark sector in which the dark matter candidate particle is accommodated. Searches for invisible decays of the Higgs boson, which may originate from the Higgs boson decaying to dark matter directly or via some mediator, would give us a clear signal of new physics. At e+e- colliders, taking advantage of the recoil mass technique, the 4-momentum of the Higgs boson can be fully reconstructed even though it decays invisibly. A specific advantage of the ILC are the polarized beams which help to suppress the background significantly. We will report our studies based on the full simulation of the ILD detector concept, using the e+e- -> ZH with Z->qq/ll channels. We obtain a sensitivity to BR(H->invisible) of 0.3% (95% C.L. upper limit) at the ILC 250 GeV with an integrated luminosity of 2 ab-1. We will also discuss the impact of center-of-mass energy, beam spectrum, ISR, and detector performance for the Higgs to invisible measurement.	12.04.2019	A (poster)
31	Lepton-Photon 2019 Toronto	**Production and electroweak couplings of 3rd generation quarks at the ILC** The 3rd generation quarks are, due to their large mass, highly sensitive probes for new physics connected to the electroweak symmetry breaking. Linear e+e- colliders allow for clean measurements of heavy quark final states between the Z-Pole and the TeV scale with sensitivities to different aspects of the manifestations of new physics in the extracted electroweak couplings. At the same time these processes are ideal benchmarks for the optimisation of detectors at linear colliders. This includes for example the event-by-event distinction between b and anti-b quarks indispensable for the proper measurement of differential observables. The contribution will outline with full simulation studies the capabilities of the ILD concept. An efficiency of 30% has been achieved for the charge measurements in bb final states, which is about a factor three better than presented earlier. We will also present new results using the fully hadronic tt final state. Finally quantitative estimations of the reach in detecting the onset of new physics will be given.	12.04.2019	A (poster)
30	Lepton-Photon 2019 Toronto	**The ILC as a natural SUSY discovery machine and precision microscope: From light higgsinos to tests of unification** The requirement of electroweak naturalness in simple supersymmetric models motivates the existence of a cluster of four light higgsinos with mass 100-300 GeV, the lighter the better. While such light compressed spectra may be challenging to observe at LHC, future e+e- colliders with sqrt(s) > 2m(higgsino) would serve as both a SUSY discovery machine and a precision microscope. We study higgsino pair production signatures at the ILC based on full, Geant4-based simulation of the ILD detector concept. We examine several benchmark scenarios that may or may not be accessible to HL-LHC searches, with mass di?fferences between the higgsino states between 20 and 4 GeV. Assuming sqrt(s)=? 500 GeV and 1000 fb^-1 of integrated luminosity, the individual higgsino masses can be measured to 1-2% precision in case of the larger mass diff?erences, and still at the level of 5% for the smallest mass diff?erence case. The higgsino mass splittings are sensitive to the electroweak gaugino masses and can allow extraction of gaugino masses to ? 3 - 20% (depending on the model). Extrapolation of gaugino masses via renormalization group running can test the hypothesis of gaugino mass uni?cation. We also examine a case with natural generalized mirage mediation where the uni?cation of gaugino masses at an intermediate scale apparently gives rise to a natural SUSY spectrum somewhat beyond the reach of HL-LHC.	12.04.2019	A (poster)
29	EPS-HEP 2019 Ghent	**Probing the dark sector via searches for invisible decays of the Higgs boson at the ILC** To unravel the nature of dark matter is one of the most important goals in particle physics today. The Higgs field may well be the portal that couples to a whole new dark sector in which the dark matter candidate particle is accommodated. Searches for invisible decays of the Higgs boson, which may originate from the Higgs boson decaying to dark matter directly or via some mediator, would give us a clear signal of new physics. At e+e- colliders, taking advantage of the recoil mass technique, the 4-momentum of the Higgs boson can be fully reconstructed even though it decays invisibly. A specific advantage of the ILC are the polarized beams which help to suppress the background significantly. We will report our studies based on the full simulation of the ILD detector concept, using the e+e- -> ZH with Z->qq/ll channels. We obtain a sensitivity to BR(H->invisible) of 0.3% (95% C.L. upper limit) at the ILC 250 GeV with an integrated luminosity of 2 ab-1. We will also discuss the impact of center-of-mass energy, beam spectrum, ISR, and detector performance for the Higgs to invisible measurement.	12.04.2019	A
28	EPS-HEP 2019 Ghent	**Production and electroweak couplings of 3rd generation quarks at the ILC** The 3rd generation quarks are, due to their large mass, highly sensitive probes for new physics connected to the electroweak symmetry breaking. Linear e+e- colliders allow for clean measurements of heavy quark final states between the Z-Pole and the TeV scale with sensitivities to different aspects of the manifestations of new physics in the extracted electroweak couplings. At the same time these processes are ideal benchmarks for the optimisation of detectors at linear colliders. This includes for example the event-by-event distinction between b and anti-b quarks indispensable for the proper measurement of differential observables. The contribution will outline with full simulation studies the capabilities of the ILD concept. An efficiency of 30% has been achieved for the charge measurements in bb final states, which is about a factor three better than presented earlier. We will also present new results using the fully hadronic tt final state. Finally quantitative estimations of the reach in detecting the onset of new physics will be given.	12.04.2019	A
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26	Higgs Couplings 2018	**Coupling strength and CP properties in Higgs -> tau tau at ILC** The CP nature of the Higgs and its couplings is imprinted on spin correlations between its decay products. We will present a method based on Higgs decays to tau lepton pairs, showing that the mixing between even and odd CP components can be measured to a precision of 4.3 degrees at ILC-250. We will also show results on the expected measurement precision of the coupling between the Higgs boson and tau lepton at ILC. Based on Eur. Phys. J. C75 (2015) no.12, 617 Phys.Rev. D98 (2018) no.1, 013007 NIM A810 (2016) 51	09.01.2018	A
25	Higgs Couplings 2018	**Higgs self-coupling projections at the ILC** Higgs self-coupling measurement provides a direct probe of the Higgs potential, which is important both for understanding of electroweak symmetry breaking and for testing of electroweak baryogenesis. In this talk we will present studies addressing two issues about the Higgs self-coupling measurement at the ILC at the center-of-mass energies of 500 GeV and 1 TeV. The first issue is about how model independent determination of the triple Higgs coupling is possible, provided that in a general BSM theory the double Higgs production processes can receive corrections not only from the triple Higgs coupling but also from other Higgs couplings. The second issue is a realistic estimation about the experimental precision on the double Higgs production cross sections, based on the full detector simulation using the ILD and by including all SM background processes. The studies for the first issue are published on arXiv:1708.09079, while the paper for the second issue is in preparation.	09.01.2018	A

24	Higgs Couplings 2018	**Sensitivity to anomalous VVH couplings at the ILC** Abstract: deviations in Higgs couplings may not only appear in the strength of SM-like Higgs couplings, but also appear as distinct Lorentz structures, which is manifest in particular in the effective filed theory. In the case of VVH couplings (V=Z, W), one new CP-even and one new CP-odd tensor couplings can be presented as anomalous couplings. Experimental determinations of those anomalous VVH couplings can provide new insights in probing the BSM models and finding new CP violating effects in the Higgs sector. This talk reports the experimental studies of anomalous VVH couplings at the ILC, emphasizing how the effects of each anomalous coupling and SM-like coupling can be distinguished and determined simultaneously by taking advantage of various angular distributions. The results will be given based on the full detector simulation of the ILD and including major Higgs production and decay channels, for both Ecm=250 and 500 GeV at the ILC. Part of the studies has been published on arXiv:1712.09772, a more comprehensive paper is in preparation.	09.01.2018	A
23	Higgs Couplings 2018	**Prospects of measuring Higgs boson decays into muon pairs at the International Linear Collider** We study the prospects for measuring the branching ratio of h+ at the International Linear Collider. The study is performed at center-of-mass energies of 250 GeV and 500 GeV based on full simulation of the International Large Detector. For both center-of-mass energies, the two final states qqh and h have been analyzed. For an integrated luminosity of 2 ab1 at 250 GeV and 4 ab1 at 500 GeV, the combined precision on the cross section times branching ratio of h+ is estimated to be 17.5%. The impact of the transverse momentum resolution on this analysis is also studied. A precision of 15% could be archived with 10 times better resolution, while a precision would increase to 25% with 10 times worse resolution.	09.01.2018	A
22	VERTEX 2018	**Status of tracking detectors at ILC** Precision measurements of the properties of the Higgs boson, discovered by the ATLAS and CMS experiments of the LHC, and the top quark, the heaviest known elementary particle, are among the main physics goals for experiments at the proposed international linear collider (ILC). These measurements must reach an unprecedented level of precision to allow us to decipher the next fundamental layer of physics, called new physics. The vertex and tacking detectors of the ILC experiments will be a key towards accomplishing the ambitious physics programs of the latter. We discuss the design requirements of these state-of-the-art detector systems, driven from the stringent physics and experimental constraints of the ILC.	08.29.2018 (from ILD and SiD)	A
21	The Rencontres of Vietnam "Windows on the Universe"	**Study of the Higgs couplings to leptons and Higgs CP properties at the ILC** In the Standard Model the many Yukawa couplings between the Higgs and fermions, responsible for the mass generation for fermions, are predicted to be strictly proportional to the masses of fermions. Any deviation from this prediction would clearly signal new physics beyond the SM. Many alternative ways of introducing Yukawa couplings in BSM models can result in quite different characteristics for different types of fermions, e.g. upper- or down-type, lepton- or quark-type, 3rd-, 2nd- or 1st-generation. More over, if the SM-like Higgs is an admixture of CP even and CP odd states, as preferred in the electroweak baryon genesis models which can potentially explain the baryon number asymmetry in our universe, the Higgs Yukawa couplings will be modified at the tree level. In particular the Higgs to tau tau decay process provides an ideal place for probing the Higgs CP properties. In this talk, we will give the prospects about the measurements of Htautau and Hmumu couplings at the International Linear Collider (ILC), including the Higgs CP phase measurement in Higgs to tautau process using a novel tau reconstruction method. All the simulation studies are performed based on the full detector simulation for the International Large Detector (ILD).	04.06.2018	A
20	The Rencontres of Vietnam "Windows on the Universe"	**Search for Light Scalars Produced in Association with a Z boson at the 250 GeV stage of the ILC** In many models with extended Higgs sectors, e.g. in Two Higgs Doublet Models, in the NMSSM as well as in Randall Sundrum models, there exists an additional scalar h, which can easily be lighter than the Standard Model (SM) like Higgs. Its coupling to the Z boson is expected to be small if the 125 GeV Higgs boson is SM-like. Such a light scalar with suppressed couplings to the Z boson would have escaped detection at LEP due to its limited luminosity. With a factor of 1000 higher luminosity and polarized beams, the International Linear Collider (ILC) is expected to have substantial discovery potential for such states. Furthermore, searches for additional scalars at LEP and LHC are usually dependent on the model details, such as decay channels. Thus, it is necessary to have a more general analysis with model-independent assumptions. We present a search for a such a light higgs boson produced in association with Z boson at the ILC with a center-of-mass energy of 250 GeV, using the full Geant4-based simulation of the ILD detector concept. In order to be as model-independent as possible, the analysis is performed using the recoil technique, in particular with the Z boson decaying into a pair of muons. Expected exclusion cross section limits for different higgs masses between 10 and 120 GeV will be given in terms of a scale factor with respect to the Standard Model Higgs-strahlung process cross section.	04.09.2018	Speaker candidates could not be found.
19	he Rencontres of Vietnam "Windows on the Universe"	**3rd Generation Quark and Electroweak Boson Couplings at the 250 GeV stage of the ILC** The 3rd generation quarks are, due to their large mass, highly sensitive probes for new physics connected to the electroweak symmetry breaking. While top quark pair production requires center-of-mass energies of larger than 350 GeV, the first stage of the ILC at a center-of-mass energy of 250 GeV can perform precision measurements of bottom quark pair production, thereby settling the long standing ~3\sigma tension between the LEP experiments and SLD. For this measurement, the polarised beams of the ILC are of special importance as they enable the separation of the vector and axial-vector couplings of the b quark to Z boson and photon. Another important precision probe for new physics are triple gauge boson coupings (TGCs). Thanks to the polarised beams and the much higher luminosity, a significant increase in precision beyond past and present experiments is expected at the first stage of the ILC for the TGCs involving W bosons. For both measurements, we will report recent projections based on detailed simulations of the ILD detector concept, and highlight the role of important detector performance aspects, e.g. for the separation of b and anti-b jets based on vertex charge measurements and particle ID.	04.10.2018	A
18	ICHEP 2018	**Study of the Higgs couplings to leptons and Higgs CP properties at the ILC** In the Standard Model the many Yukawa couplings between the Higgs and fermions, responsible for the mass generation for fermions, are predicted to be strictly proportional to the masses of fermions. Any deviation from this prediction would clearly signal new physics beyond the SM. Many alternative ways of introducing Yukawa couplings in BSM models can result in quite different characteristics for different types of fermions, e.g. upper- or down-type, lepton- or quark-type, 3rd-, 2nd- or 1st-generation. More over, if the SM-like Higgs is an admixture of CP even and CP odd states, as preferred in the electroweak baryon genesis models which can potentially explain the baryon number asymmetry in our universe, the Higgs Yukawa couplings will be modified at the tree level. In particular the Higgs to tau tau decay process provides an ideal place for probing the Higgs CP properties. In this talk, we will give the prospects about the measurements of Htautau and Hmumu couplings at the International Linear Collider (ILC), including the Higgs CP phase measurement in Higgs to tautau process using a novel tau reconstruction method. All the simulation studies are performed based on the full detector simulation for the International Large Detector (ILD).	02.27.2018	A
17	ICHEP 2018	**Search for Light Scalars Produced in Association with a Z boson at the 250 GeV stage of the ILC** In many models with extended Higgs sectors, e.g. in Two Higgs Doublet Models, in the NMSSM as well as in Randall Sundrum models, there exists an additional scalar h, which can easily be lighter than the Standard Model (SM) like Higgs. Its coupling to the Z boson is expected to be small if the 125 GeV Higgs boson is SM-like. Such a light scalar with suppressed couplings to the Z boson would have escaped detection at LEP due to its limited luminosity. With a factor of 1000 higher luminosity and polarized beams, the International Linear Collider (ILC) is expected to have substantial discovery potential for such states. Furthermore, searches for additional scalars at LEP and LHC are usually dependent on the model details, such as decay channels. Thus, it is necessary to have a more general analysis with model-independent assumptions. We present a search for a such a light higgs boson produced in association with Z boson at the ILC with a center-of-mass energy of 250 GeV, using the full Geant4-based simulation of the ILD detector concept. In order to be as model-independent as possible, the analysis is performed using the recoil technique, in particular with the Z boson decaying into a pair of muons. Expected exclusion cross section limits for different higgs masses between 10 and 120 GeV will be given in terms of a scale factor with respect to the Standard Model Higgs-strahlung process cross section.	02.27.2018	A
16	ICHEP 2018	**3rd Generation Quark and Electroweak Boson Couplings at the 250 GeV stage of the ILC** The 3rd generation quarks are, due to their large mass, highly sensitive probes for new physics connected to the electroweak symmetry breaking. While top quark pair production requires center-of-mass energies of larger than 350 GeV, the first stage of the ILC at a center-of-mass energy of 250 GeV can perform precision measurements of bottom quark pair production, thereby settling the long standing ~3\sigma tension between the LEP experiments and SLD. For this measurement, the polarised beams of the ILC are of special importance as they enable the separation of the vector and axial-vector couplings of the b quark to Z boson and photon. Another important precision probe for new physics are triple gauge boson coupings (TGCs). Thanks to the polarised beams and the much higher luminosity, a significant increase in precision beyond past and present experiments is expected at the first stage of the ILC for the TGCs involving W bosons. For both measurements, we will report recent projections based on detailed simulations of the ILD detector concept, and highlight the role of important detector performance aspects, e.g. for the separation of b and anti-b jets based on vertex charge measurements and particle ID.	02.27.2018	S

15	7th International Conference on High Energy Physics in the LHC era	**ILD for the International Linear Collider** The International Large Detector (ILD) is a detector concept for the International Linear Collider (ILC), a 250-500 GeV (extendable to 1 TeV) center-of-mass high-luminosity linear electron-positron collider. The ILD is optimized with the concept of particle flow for overall event reconstruction so that it will deliver excellent performance for high-precision Higgs and top measurements, as well as high-sensitivities for possible new phenomena, utilizing the advantages of an electron-positron collider. Particle flow implies that all particles in an event, charged and neutral, are individually reconstructed. This requirement has a large impact on the design of the detector, and has played a central role in the optimisation of the system. Superb tracking capabilities and outstanding detection of secondary vertices are other important aspects. The overall layout, sub-detector technologies, expected performance, and recent progress of the ILD will be presented.	11.15.2017	Modified to a more general talk on ILC
14	CHEF 2017	**Technical instrumentation R&D for ILD large scale device** (V. Balagura for ILD SiW ECAL group, submitted by J.C. Brient)	07.14.2017	A
13		**Cooling system R&D and endocarp geometry** (D. Grondin for ILD SiW ECAL group, submitted by J.C. Brient)		A
12		**Dead zone analysis of ECAL barrel modules under static and dynamic loads** (T. Pierre-Emile for ILD SiW ECAL group, submitted by J.C. Brient)		A
11		**Performance study of SKIROC2/A ASIC for ILD Si-W ECAL** (T. Suehara for ILD SiW ECAL group, submitted by J.C. Brient)		A
10		**ECAL device in view of the ILC staging proposal** (H. Videau for ILD SiW ECAL group, submitted by J.C. Brient)		A
9	IEEE NSS/MIC 2017	**ILD for the International Linear Collider** (submitted by Kiyotomo Kawagoe and Karsten Buesser) The International Large Detector (ILD) is a detector concept for the International Linear Collider (ILC), a 250-500 GeV (extendable to 1 TeV) center-of-mass high-luminosity linear electron-positron collider. The ILD is optimized with the concept of particle flow for overall event reconstruction so that it will deliver excellent performance for high-precision Higgs and top measurements, as well as high-sensitivities for possible new phenomena, utilizing the advantages of an electron-positron collider. Particle flow implies that all particles in an event, charged and neutral, are individually reconstructed. This requirement has a large impact on the design of the detector, and has played a central role in the optimisation of the system. Superb tracking capabilities and outstanding detection of secondary vertices are other important aspects. The overall layout, sub-detector technologies, expected performance, and recent progress of the ILD will be presented. ieee_ILD_v2.pdf	05.08.2017	A (poster)
8	EPS-HEP 2017	**Sensitivity to anomalous VVH couplings at the ILC** (submitted by Tomohisa Ogawa) The discovery of the 125 GeV Higgs boson, which was the last missing element of the standard model (SM), provided us the insight that the electroweak symmetry breaking is done by a Higgs condensate in the vacuum, namely the Higgs mechanism. However the SM does not give the dynamics explaining why and how that Higgs condensate is formed. On the other hand, the SM can not provide candidate particles for the dark matter, and can not explain the baryon number asymmetry in our universe, etc. Therefore new physics beyond the SM is needed to answer all of those questions. Remarkably the effects of new physics will be inevitably imprinted in the properties of the Higgs boson, namely its couplings to other SM particles and its CP nature. At the future International Linear Collider (ILC), one of the most important goals is precise measurement those properties. In this talk, we will focus on the measurement of the general Lorentz structure of couplings between Higgs and vector bosons (VVH, V=Z or W) at the ILC, based on an approach of the effective field theory. The sensitivities to both CP-even and CP-odd dimension-5 operators are evaluated by exploring various Higgs production and decay channels, in particular taking advantage of the sensitivities from differential cross sections measurements. The studies are performed based on full detector simulation of the International Large Detector (ILD), for ECM = 250 GeV and 500 GeV. Combined sensitivities are given for some realistic running scenarios of the ILC.	04.13.2017	A (changed from poster to oral)
7		**Prospects for electroweak precision measurements and triple gauge couplings at a staged ILC** (submitted by Jenny List) In absence of a direct discovery of new particles, precision measurements of the properties of known particles will provide the most powerful probe for phenomena beyond the Standard Model. Future electron positron linear colliders with polarised beams, like the International Linear Collider (ILC), will provide a unique laboratory for such measurements, complementary to hadron colliders. In this contribution, we will review in particular the prospects for electroweak precision measurements, like the mass of the W boson, or the weak mixing angle, as well as for measurements of charged triple gauge couplings based simulations of the ILD detector concept for the ILC. In all of these, the exact knowledge of the beam polarisation and the beam energy plays an important role. Therefore we will also discuss the precision determination of these accelerator parameters from collision data. We will pay special tribute to the most recent discussions concerning a possible first stage of the ILC operating at a center-of-mass energy of 250 or 350 GeV, but also comment of the full ILC running plan.	04.13.2017	A (poster), presenter : Robert Karl
6		**Full simulation study of the process $e^+ e^- \rightarrow b\bar{b}$ at \sqrt{s) = 250 GeV at the ILC** (submitted by Roman Pöschl) The heavy quark doublet plays a central role in the quest for new physics. The complementary between studies of electroweak top quark production and bottom quark production is therefore intuitively clear and pointed out in the literature. Let us remind that the tension between the LEP measurement and the Standard Model prediction of the forward-backward asymmetry A_{fb}^b is still one of the unsolved questions in the field and may be interpreted as a first manifestation of new physics in the heavy quark sector. The process $e^+ e^- \rightarrow b\bar{b}$ at the ILC offers a unique opportunity for a final word on the tension. Polarised beams allow for a large disentangling of the coupling constants or form factors that govern the $\gamma/Z \,b\bar{b}$ vertex. The contribution will present a detailed simulation study of the process $e^+ e^- \rightarrow b\bar{b}$ at 250\, GeV with the ILD Detector. Besides the phenomenological implications, the contribution will demonstrate that with a careful analysis of the final state the charge of the b-quarks can be determined on an event-by-event basis with the ILD Detector. Such a capability is unprecedented by past and present particle physics experiments.	04.13.2017	A (poster), presenter: Sviatoslav Bilokin
5		**Naturalness and light Higgsinos: why ILC is the right machine for SUSY discovery** (submitted by Jacqueline Yan) Radiatively-driven natural Supersymmetry, a theoretically and experimentally well-motivated framework, centers around the predicted existence of four light, nearly mass-degenerate Higgsinos with mass $\sim 100-200$ GeV (not too far above m_Z). Their small mass splittings of at most 20 GeV implies very little visible energy of accompanying Standard Model particles decayed from heavier Higgsinos. Given that other SUSY particles are considerably heavy, this makes detection challenging at hadron colliders. On the other hand, the clean environment of an electron-positron collider with $\sqrt{s}>2m_{Higgsino}$ would enable a decisive search of these required Higgsinos, and thus either the discovery or exclusion of natural SUSY. We present a detailed simulation study of precision measurements of Higgsino masses and production cross sections at $\sqrt{s}$ = 500 GeV of the proposed International Linear Collider currently under consideration for construction in Japan. The study is based on a Geant4 simulation of the International Large Detector concept. We examine several benchmark points just beyond the HL-LHC reach, with a mass spectrum containing four light Higgsinos directly accessible by the ILC, and the mass differences between the lightest SUSY particle and the heavier states ranging from about 4 to 20 GeV. It can be shown that their masses and production cross sections are able to be precisely measured to approximately 1% precision or better. These precise measurements allow for extracting the underlying weak scale SUSY parameters. The fitted parameters give predictions for the masses of heavier SUSY states, which provide motivation for future high-energy colliders. Additionally, dark matter properties may be derived. Evolution of the measured gaugino masses to high energies should allow one to distinguish the hypothesis of gaugino mass unification from other compelling possibilities such as mirage mediation.	03.31.2017	A, speaker: Suvi-Leena Lehtinen
4	ALPS2017	**Natural SUSY at the ILC: from MZ to the GUT scale** (submitted by Mikael Berggren) The most basic requirement for naturalness in supersymmetric models is the existence of rather light partners of the Higgs boson, the Higgsinos, at masses not too far above M_Z. Despite the pressure from LHC data on the simplest high-scale models (like the cMSSM), such light Higgsinos can still be realised in different types of GUT-scale models from NUHM2 to mirage unification models. The ILC will offer the unique discovery potential for the elusive higgsino particles and allow for precision measurements of their properties. In this contribution, prospects for the achievable precisions for masses, the very small mass splittings and polarised production cross sections will be presented. Based on these, we studied the possibilities to determine the SUSY parameters at the weak scale, and to extrapolate their running to the GUT scale. We will discuss the prospects to thereby differentiate between various GUT-scale models and SUSY breaking schemes and to predict the masses of the remaining SUSY particles. In particular the latter could provide important guidance for the energy scale of the next hadron collider after the LHC.	02.13.2017	A

3		**Scalar sector at future e+e- colliders** (submitted by Ivanka Bozovic-Jelisavcic) Future e+e- colliders offer excellent possibilities for precision studies in the Higgs sector due to the clean experimental conditions and low backgrounds compared to hadron colliders. At lower energies i.e. below 500 GeV, the Higgstrahlung is the dominant Higgs production mechanism. With the recoil mass analysis technique being the unique feature of e+e- colliders, the Higgstrahlung allows model-independent studies of the Higgs couplings as well as the access to the invisible Higgs decays. If considered simultaneously with WW-fusion dominating Higgs production at higher energies, determination of the Higgs total width is possible at a percent level. Scalar sector searches are reviewed for ILC and CEPC using recent research updates obtained with the fully simulated ILD and CEPC detectors.	02.01.2017	A, speaker: Junping Tian
2		**ILD for the International Linear Collider** (submitted by Kiyotomo Kawagoe) The International Large Detector (ILD) is a detector concept for the International Linear Collider (ILC), a 250-500 GeV (extendable to 1 TeV) center-of-mass high-luminosity linear electron-positron collider. The ILD is optimized with the concept of particle flow for overall event reconstruction so that it will deliver excellent performance for high-precision Higgs and top measurements, as well as high-sensitivities for possible new phenomena, utilizing the advantages of an electron-positron collider. Particle flow implies that all particles in an event, charged and neutral, are individually reconstructed. This requirement has a large impact on the design of the detector, and has played a central role in the optimisation of the system. Superb tracking capabilities and outstanding detection of secondary vertices are other important aspects. The overall layout, sub-detector technologies, expected performance, and recent progress of the ILD will be presented.	01.17.2017	R (Our abstract is merged with that of CLICdp for a more general talk.)
1	Instrumentation 2017	**ILD for the International Linear Collider** (submitted by Kiyotomo Kawagoe) The International Large Detector (ILD) is a detector concept for the International Linear Collider (ILC), a 250-500 GeV (extendable to 1 TeV) center-of-mass high-luminosity linear electron-positron collider. The ILD is optimized with the concept of particle flow for overall event reconstruction so that it will deliver excellent performance for high-precision Higgs and top measurements, as well as high-sensitivities for possible new phenomena, utilizing the advantages of an electron-positron collider. Particle flow implies that all particles in an event, charged and neutral, are individually reconstructed. This requirement has a large impact on the design of the detector, and has played a central role in the optimisation of the system. Superb tracking capabilities and outstanding detection of secondary vertices are other important aspects. The overall layout, sub-detector technologies, expected performance, and recent progress of the ILD will be presented.	12.12.2016	R (T. Omori gives a more general talk on behalf of LCC: "Status and Future Perspectives of the ILC Project: Accelerator / Detector R&D".)