Name	Title	Abstract
A. Adulpravitchai	Flavored Orbifold GUT - an SO(10) x S4 model	e Orbifold grand unified theories (GUTs) solve several problems in GUT model building. Therefore, it is intriguing to investigate similar constructions in the flavor context. In this paper, we propose that a flavor symmetry might emerge due to orbifold compactification of one orbifold and broken by boundary conditions of another orbifold. The combination of the orbifold parities in gauge and flavor space determines the zero modes. We demonstrate the construction in a supersymmetric (SUSY) SO(10) x S_4 orbifold GUT model, which predicts the tribimaximal mixing at leading order in the lepton sector as well as the Cabibbo angle in the quark sector.
D. Aristizabal	Implications of tribimaximal lepton mixing for leptogenesis	In type-I seesaw models extended with flavor symmetries accounting for the tribimaximal lepton mixing the baryon asymmetry, derived via leptogenesis, could be related with other low-energy observables. In this talk I will discuss the implications that such a symmetry can have on the different relevant parameters of leptogenesis. In particular, I will show that in the limit of exact tribimaximal mixing the CP-violating asymmetry necessary for leptogenesis vanishes and that non-vanishing values are possible only when departures from this limit are allowed.
G. Blankenburg	Different SO(10) Paths to Fermion Masses and Mixings	Recently SO(10) models with type-II see-saw dominance have been proposed as a promising framework for obtaining Grand Unification theories with approximate Tri-bimaximal (TB) mixing in the neutrino sector. We make a general study of SO(10) models with type-II see-saw dominance and show that an excellent fit can be obtained for fermion masses and mixings, also including the neutrino sector. To make this statement more significant we compare the performance of type-II see-saw dominance models in fitting the fermion masses and mixings with more conventional models which have no built-in TB mixing in the neutrino sector. For a fair comparison the same input data and fitting procedure is adopted for all different theories. We find that the type-II dominance models lead to an excellent fit, comparable with the best among the available models, but the tight structure of this framework implies a significantly larger amount of fine tuning with respect to other approaches.
F.Bazzocchi	The challenge of low scale flavor symmetry	Low scale flavor symmetries are appealing for theoretical and phenomenological reasons. Nevertheless they are more constrained than high energy ones: new contributions to the oblique corrections as well as new sources of CP and flavour violation usually appear in this context. This talk will address the issue of the possibility of having a realistic low scale flavor symmetry, focusing on the discrete non abelian ones.

Name	Title	Abstract
S. Boucenna	Phenomenology of a Discrete Dark Matter	In this talk, I will present the phenomenological study of a Dark Matter (DM) candidate whose stability is achieved by means of a Z2 parity resulting from the same non-abelian discrete flavour symmetry that accounts for the observed patterns of neutrino mixing. This is realised with the A4 group. Regions in the parameter space are found to be compatible with the latest results of direct and indirect detection searches of DM as well as collider constraints making our candidate a viable one.
Gui-Jun Ding	SUSY Adjoint $SU(5)$ Grand Unified Model with S_4 Flavor Symmetry	We construct a supersymmetric (SUSY) $SU(5)$ model with the flavor symmetry $S_4 \times Z_3 \times Z_4$. Three generations of adjoint matter fields are introduced to generate the neutrino masses via the combined type I and type III see-saw mechanism. The first two generations of the the **10** dimensional representation in $SU(5)$ are assigned to be a doublet of S_4, the second family **10** is chose as the first component of the doublet, and the first family as the second component. Tri-bimaximal mixing in the neutrino sector is predicted exactly at leading order,charged lepton mixing leads to small deviation from the tri-bimaximal mixing pattern, which is desceribed by well-known sum rules. Subleading contributions introduce corrections of order λ_c^2 to all three lepton mixing angles. The model also reproduces a realistic pattern of quark and charged lepton masses and quark mixings. Finally the phenomenological implications of the model are discussed.
J.N.Esteves	A_4-based neutrino masses with Majoron decaying dark matter	We propose an A_4 flavor-symmetric $SU(3) \times SU(2) \times U(1)$ seesaw model where lepton number is broken spontaneously. A consistent two-zero texture pattern of neutrino masses and mixing emerges from the interplay of type-I and type-II seesaw contributions, with important phenomenological predictions. We show that, if the Majoron becomes massive, such seesaw scenario provides a viable candidate for decaying dark matter, consistent with cosmic microwave background lifetime constraints that follow from current WMAP observations. We also calculate the subleading one-loop-induced decay into photons which leads to a mono-energetic emission line that may be observed in future X-ray missions such as Xenia.
Y.Farzan	A Novel Method to Extract Dark Matter Parameters from Neutrino Telescope Data	When the Dark Matter (DM) particles captured in the Sun directly annihilate into neutrino pairs, the oscillatory terms in the oscillation probability do not average to zero and can lead to a seasonal variation as the distance between the Sun and Earth changes in time. We explore this feature as a novel method to extract information on the properties of dark matter. We show that by studying the variation of the flux over a few months, it would in principle be possible to derive the DM mass as well as new information on the flavor structure of the DM annihilation modes. In addition to analytic analysis, we present the results of our numerical calculations that take into account scattering and regeneration of neutrinos traversing the Sun.

Name	Title	Abstract
C.Hagedorn	Continuous and discrete symmetries	In this talk I give an overview over continuous and discrete groups and how these are used in the field of model building as flavor symmetries which act on the space of the three generations of elementary particles. I mainly concentrate on discussing generic mathematical properties of these groups relevant for understanding their possible predictive power when applied in order to explain fermion mass and mixing patterns. I also put emphasis on the classification of discrete groups.
Hiroaki Sugiyama	Phenomenology in the Higgs Triplet Model with the A_4 Symmetry	I will discuss the phenomenology of the doubly charged scalars of $SU(2)_L$-triplet fields in the simplest extension of the Higgs Triplet Model with the A_4 symmetry. It is shown that their decays into a pair of leptons have unique flavor structures which can be tested at the LHC if some of their masses are below the TeV scale. Sizable decay rates for "tau to mubar e e" and "tau to ebar mu e" can be obtained naturally while other lepton flavor violating decays of charged leptons are almost forbidden in this model, which can be tested at MEG and super B factory.
A. Kadosh	RS - A4 model for quarks and leptons and phenomenological implications	
K. Kadota	The effects of SUSY seesaw on the dark matter and collider signals	The effects of the GUT scale seesaw mechanisms on the dark matter and collider signals will be discussed. For the dark matter, the disappearance of the focus point regions and the appearance of the sneutrino coannihilation regions, in consistence with the thermal neutralino relic abundance, will be discussed. For the collider signals, the enhancement of the tau lepton signals in the constrained seesaw scenario will be presented.
J. Kersten	Supersymmetric Musings on the Predictivity of Family Symmetries	I discuss the predictivity of family symmetries for the soft supersymmetry breaking parameters in the framework of supergravity. Unknown details of the messenger sector and the supersymmetry breaking hidden sector enter into the soft parameters, making it difficult to obtain robust predictions. However, specific choices of messenger fields can improve the predictivity for the soft parameters.

Name	Title	Abstract
B. Koch	Gravitino Dark Matter and Neutrino Masses in Partial Split Supersymmetry	Partial Split Supersymmetry with bilinear R-parity violation allows to reproduce all neutrino mass- and mixing parameters. The viable dark matter candidate in this model is the gravitino. We study the hypothesis that both possibilities are true: Partial Split Supersymmetry explains neutrino physics and that dark matter is actually composed of gravitinos. Since the gravitino has a small decay probability, its decay products could be observed in astrophysical experiments. Combining bounds from astrophysical photon spectra with the bounds coming from the mixing matrices in the neutrino sector we derive a stringent upper limit for the allowed gravitino mass. This mass limit is in good agreement with the findings of direct dark matter searches.
M. Krauss	Inverse see-saw from higher than $d = 5$ effective operators in SUSY, and its phenomenological implications at the LHC	We discuss neutrino masses generated by higher than d=5 effective operators in a supersymmetric framework. We illustrate that at tree level, many possibilities lead to inverse see-saw scenarios with the lepton number violating term naturally suppressed by a heavy mediator mass. We show one example with heavy fermion doublets as additional mediators. This scenario may have LHC-observable phenomenology, since the added fermions lead to lepton number violating processes with displaced vertices. We will also discuss how this model might be embedded in an $SU(5)$ GUT.
P. Leser	S_3 flavor symmetry at the LHC	Discrete symmetries employed to explain neutrino mixing and mass hierarchies are often associated with an enlarged scalar sector which might lead to exotic Higgs decay modes. We explore such a possibility in a scenario with S_3 flavor symmetry which requires three scalar $SU(2)$ doublets. The spectrum is fixed by minimizing the scalar potential, and we observe that the symmetry of the model leads to tantalizing Higgs decay models potentially observable at the CERN Large Hadron Collider (LHC).
P. O. Ludl	Maximal atmospheric neutrino mixing from texture zeros and quasi-degenerate neutrino masses	It is well-known that exactly maximal atmospheric neutrino mixing cannot be enforced by Abelian symmetries. The only extremal mixing angle enforceable by means of an Abelian symmetry is a vanishing reactor mixing angle. We will show that assuming neutrinos to be Majorana particles, in the basis where the charged lepton mass matrix is diagonal, there are two texture zeros which, in the limit of a quasi-degenerate neutrino mass spectrum, lead to nearly-maximal atmospheric neutrino mixing irrespective of the values of the solar and reactor mixing angles. In the same limit the aforementioned cases of texture zeros also lead to maximal CP-violation, provided the reactor mixing angle is not too small. Since texture zeros may always be implemented by the use of Abelian symmetries this scenario could serve as an alternative to non-Abelian family symmetries.

Name	Title	Abstract
M. Malinsky	Flavour aspects of GUTs	
V. Maurer	From Flavour to SUSY Flavour Models	If supersymmetry (SUSY) will be discovered, successful models of flavour not only have to provide an explanation of the flavour structure of the Standard Model fermions, but also of the flavour structure of their scalar superpartners. We discuss aspects of such "SUSY flavour" models, towards predicting both flavour structures, in the context of supergravity (SUGRA). We point out the importance of carefully taking into account SUSY-specific effects, such as 1-loop SUSY threshold corrections and canonical normalization, when fitting the model to the data for fermion masses and mixings. This entangles the flavour model with the SUSY parameters and leads to interesting predictions for the sparticle spectrum. We demonstrate these effects by analyzing an example class of flavour models in the framework of an SU(5) Grand Unified Theory with a family symmetry with real triplet representations. For flavour violation through the SUSY soft breaking terms, the class of models realizes a scheme we refer to as "Trilinear Dominance", where flavour violation effects are dominantly induced by the trilinear terms.
I. de Medeiros Varzielas	Neutrino phenomenology and considerations on family symmetry invariants	By conveniently decomposing the effective neutrino mass matrix associated with tribimaximal mixing, we derive generic predictions in terms of the parameters governing the neutrino masses. We extend this phenomenological analysis to other mass-independent mixing schemes which are related to the tribimaximal form by a unitary transformation. We classify models that produce tribimaximal leptonic mixing through the group structure of their family symmetries in order to point out that there is often a direct connection between the group structure and the phenomenological analysis.
L. Merlo	Neutrinoless double beta decay in flavour physics	Neutrinoless double beta (0n2B) decay is a fundamental observable to probe the Majorana character of neutrinos and to investigate on their absolute mass scale. The present status of experiments searching for 0n2B decay is reviewed and the most relevant results are discussed. The interplay with flavour physics in general provides clear predictions for 0n2B decay and some major examples are presented.
J.Jones Perez	$U(2)$ and Minimal Flavour Violation in Supersymmetry	n SUSY, the MFV framework is usually called upon in order to ameliorate the New Physics contribution to FCNC. However, this framework, based on a $U(3)^3$ flavour symmetry, is insufficient to solve current tensions in $\Delta F = 2$ processes related to CP Violation. In this work, we analyze the consequences of reducing the symmetry down to a $U(2)^3$ acting on the two lighter generations. We shall outline the $U(2)^3$ framework, and show how it can resolve the current tension between $K^0 \to \bar{K}^0$ and $B^0 \to \bar{B}^0$ mixing, predicting at the same time a larger phase in $B_s^0 \to \bar{B}_s^0$ mixing. The preferred region for the gluino and the left-handed sbottom masses is below about $1 \div 1.5$ TeV.

Name	Title	Abstract
A. Papa	The $\mu^+ \to e^+\gamma$ decay: waiting from the new results by means of the MEG experiment	The aim of the MEG experiment is to measure the branching ratio of the rare muon decay $BR = \frac{\mu^+ \to e^+\gamma}{\mu^+ \to e^+\nu_e\bar{\nu}_\mu}$ at a sensitivity of 10^{-13}. To reach this goal, the experiment must use the most intense continuous muon beam available ($\approx 10^8 \mu/s$) and obtain the highest energy, time and space resolutions, today reachable. MEG started to collect data at the end of 2008. During 2009 a large part of the data taking time was devoted to calibration measurements and detector performance optimizations; a new physics data sample was collected at the end of this year in 1.5 months of acquisition time. We have continued to take data during 2010 and the final analysis of this sample is going on. Our final result will include both 2009 and 2010 data samples. A description of the main features of each subdetector and of the measured resolutions are given and the preliminary results of the search for $\mu^+ \to e^+\gamma$ decay based on the 2009 data sample are presented.
G. Panotopoulos	The physics of a new gauge boson in a Stueckelberg extension of the two-Higgs-doublet model	String theory constructions using D-brane physics offer a framework where ingredients like extra abelian factors in the gauge group, more than one Higgs doublet and a generalized Green-Schwarz mechanism appear at the same time. Motivated by works towards the direction of obtaining the Standard Model in orientifold constructions, we study in the present work a Stueckelberg extension of the two-Higgs-doublet model. The distinctive features of our model are i) a sharp decay width for the heavy gauge boson, and ii) a charged Higgs boson having two main decay channels at tree level with equal branching ratios.
K. M. Patel	Viability of the exact tri-bimaximal mixing at the GUT scale in $SO(10)$	The general structures for the charged lepton and the neutrino mass matrices leading to the tri-bimaximal leptonic mixing are determined. These are then integrated into a particular SO(10) model within which detailed fits to fermion masses and mixing angles are given. It is shown that one can obtain very good fits to all the fermion masses and quark mixing angles keeping the tri-bimaximal leptonic mixing intact. Various perturbations to the tri-bimaximal mixing which can arise in the model are considered and their impact on the predictions of the reactor angle is numerically discussed.
W. Porod	Testing the flavour sector of supersymmetric models at the LHC	The soft breaking sector of supersymmetric models contains several sources of additional flavour structures beyond the ones of the Standard Model. After a brief review of existing bounds we point out that despite stringent constraints from rare lepton and meson decays there is still the possibilty to observe sizable flavour violating signals in production and decays of supersymmetric particles at the LHC.
W. Rodejohann	Predicting deviations and alternatives to tri-bimaximal mixing	The overwhelming majority of flavor symmetry models focusses on tri-bimaximal mixing (TBM). Neutrino mass sum-rules are given as one rather robust example on how to distinguish some of them from each other. We classify mechanims to deviate from TBM and estimate the typical order of magnitude of the corrections. Then we present several alternatives to TBM, and outline their origin in flavor symmetries. Finally, an example on how to to accomodate light eV-scale sterile neutrinos in a popular A4 model is discussed, which in principle works as well for keV warm dark matter sterile neutrinos.

Name	Title	Abstract
Saavedra	Flavour and the Tevatron t tbar asymmetry	The forward-backward asymmetry measured by CDF has motivated numerous explanations beyond the SM. I review several of these explanations, such as new flavour-violating Z' bosons, colour sextets and triplets, and the connection to flavour
U. Saldana-Salazar	State of the Art of the Minimal S_3-Invariant Extension of the Standard Model	The Minimal S_3-Invariant Extension of the Standard Model is formulated by introducing in the theory three Higgs fields that are $SU(2)_L$ doublets and a flavour permutational symmetry, S_3, in addition to the Majorana nature of massive neutrinos. Therefore, the concepts of flavour and generations are extended to the Higgs sector. I will discuss the state of the art of the present model as well as some new results we have been working on.

Name	Title	Abstract
J. Santiago Perez	Lepton masses in holographic composite Higgs models.	We discuss lepton masses in the context of a holographic composite Higgs model with a discrete A_4 symmetry. The mixing pattern is very close to tribimaximal and the structure of the model provides a double layer of flavor protection with interesting consequences. Radiative lepton flavor violation is close to the current experimental limit and predicts light lepton resonances with strong coupling to the tau lepton. We review the LHC reach of such resonances.
H.Serodio	Resonant leptogenesis and tribimaximal leptonic mixing with A_4 symmetry	We investigate the viability of thermal leptogenesis in type-I seesaw models with leptonic flavour symmetries that lead to tribimaximal neutrino mixing. We consider an effective theory with an $A_4 \times Z_3 \times Z_4$ symmetry, which is spontaneously broken at a scale much higher than the electroweak scale. At the high scale, leptonic Yukawa interactions lead to exact tribimaximal mixing and the heavy Majorana neutrino mass spectrum is exactly degenerate. In this framework, leptogenesis becomes viable once this degeneracy is lifted either by renormalization group effects or by a soft breaking of the A_4 symmetry. The implications for low-energy neutrino physics are discussed.
Y. Shimizu	Relating Quarks and Leptons without Grand-Unification	In combination with supersymmetry, flavor symmetry may relate quarks with leptons, even in the absence of a grand-unification group. We propose a model where both supersymmetry and the assumed A4 flavor symmetries are softly broken. We predict a relation between down-type quarks and charged lepton masses. We also predict a correlation between the Cabibbo angle in the quark sector, and the reactor angle characterizing CP violation in neutrino oscillations.
Sin Kyu Kang	Revisiting the Quark-Lepton Complementarity and Triminimal Parametrization of Neutrino Mixing Matrix	We examine how a parametrization of neutrino mixing matrix reflecting quark-lepton complementarity can be probed by considering phase-averaged oscillation probabilities, flavor composition of neutrino fluxes coming from atmospheric and astrophysical neutrinos and lepton flavor violating radiative decays. We discuss about some distinct features of the parametrization by comparing with the triminimal parametrization of perturbations to tri-bimaximal neutrino mixing matrix.
H. Serodio	Leptogenesis and flavour symmetries	Based on symmetry arguments, it is shown that in type-I seesaw models the Dirac-neutrino Yukawa coupling combinations relevant for leptogenesis are diagonal in the physical basis where the charged leptons and heavy Majorana neutrinos are diagonal. This will lead to zero CP asymmetry in leading order. Type-II seesaw flavour models are not so restrictive and in general will allow for leptogenesis.
M. Spinrath	Right unitarity triangles and tri-bimaximal mixing from discrete symmetries and unification	We propose new classes of models which predict both tri-bimaximal lepton mixing and a right-angled Cabibbo-Kobayashi-Maskawa (CKM) unitarity triangle, alpha approximately 90 degrees. The ingredients of the models include a supersymmetric (SUSY) unified gauge group such as SU(5), a discrete family symmetry such as A4 or S4, a shaping symmetry including products of Z2 and Z4 groups as well as spontaneous CP violation. We show how the vacuum alignment in such models allows a simple explanation of alpha approximately 90 degrees by a combination of purely real or purely imaginary vacuum expectation values (vevs) of the flavons responsible for family symmetry breaking.

Name	Title	Abstract
E. Stamou	Constrains on Flavour Gauge Models from FCNCs	New neutral heavy gauge bosons appear automatically in many beyond the Standard Model (SM) constructions with an extended gauge sector. Typical examples are Z' models and gauge-flavour models in which the flavour symmetry, necessary to explain the SM fermion masses and mixings, is gauged. Often, additional heavy exotic fermions must also be introduced to cancel the anomalies from the new gauge sector. In phenomenologically testable scenarios, the lightest heavy bosons and fermions have masses around the TeV scale and may be directly produced in current colliders. On the other hand, indirect bounds are present since the New Physics contributions affect low-energy Flavour-Changing-Neutral-Current (FCNC) observables. In this talk, I present constrains on flavour-gauge models from these FCNCs arising from both new neutral-gauge bosons and possibly existing exotic fermions.
M. Taoso	News on indirect and direct dark matter searches	In this talk, we review the current status of direct and indirect Dark Matter (DM) searches, focusing in particular on those observations which have been interpreted as possible hints of a dark matter signal. We then discuss about the prospects for dark matter detection with upcoming experiments and the complementarity between different methods.
T. Toma	Indirect detection of dark matter and flavor symmetry	A few years ago, the positron excess and no antiproton excess in the cosmic ray are observed by some experiments. This might be explained by annihilation or decay of dark matter. If one consider it to be an indirect evidence of annihilation or decay of dark matter, the flavor of produced leptons is important to fit the experiment and escape from the constraints of diffuse gamma ray. In my talk, I would like to talk that the flavor symmetry D_6 in a specific model takes an important role in the flavor choice. Direct detection and collider detection of dark matter are also discussed if I have enough time.
M. Tortola	Status of three-flavour oscillation parameters from global neutrino data	

Name	Title	Abstract
O. Zapata Norea	Baryon number violation from from anomalous $U(1)_H$ models	We study a supersymmetric model with R-parity violation and extended with an anomalous horizontal symmetry $U(1)_H$. Our model considers only trilinear baryon number violating couplings which implies hadronic decays of the lightest supersymmetric particle (LSP). The LSP branching ratios are analyzed and its consequences for collider physics are mentioned. Implications for cosmology are analyzed also. The supressions for the superpotential couplings are properly generated and the mass matrix for the neutrinos is constructed.
Sanjib Agarwalla	Very-short-baseline Neutrino Anomalies and Future Probes	Recent results from very-short-baseline (VSBL) neutrino oscillation studies seem to point towards neutrino oscillations at high Δm^2 involving sterile neutrinos. Here we propose that a combination of decay-at-rest (DAR) neutrino source and large liquid scintillator detectors like NOvA and LENA could provide a stringent test of these recent ambiguous signals for VSBL oscillations at high Δm^2. These detectors are ¿ 50 m long, and so with a DAR beam, the characteristic oscillation wave will be apparent over the length of the detector, providing a powerful verification of the oscillation phenomena.