CURRICULUM VITÆ
&
RESEARCH PROPOSAL

CONSTANTINOS PALLIS

DEPARTMENT OF PHYSICS
UNIVERSITY OF CYPRUS

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CONTENTS

I CURRICULUM VITÆ

A PERSONAL DATA

Surname:	Pallis
First name:	Constantinos (Costas)
Place of birth:	Corfu, Greece
Date of birth:	May 11, 1971
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B EDUCATION - ACADEMIC POSTS

1989 - 1993	Undergraduate student at the Physics Department of the *Aristotle University of Thessaloniki* (A.U.TH). Option in Theoretical Physics.
September 1993 - 1994	Diploma Thesis. *Thesis Title:* "Solitons in 1+1 dimensions" *Supervisors:* Associate Professor N.D. Vlachos (Particle Physics Section of the Department of Physics of A.U.TH) and Professor C. Bachas ("Centre de Physique Theorique" of Ecole Polytechnique).
October 1994	Degree in Physics from A.U.TH. Grade "Very Good" (7.51/10).
November 1994 - June 1995	Course on Particle Physics at "Centre de Physique Theorique" in Marseille and NCSR "Dimocritos".
October 1995 - July 2000	Ph. D student at the Physics Division of the School of Technology in the A.U.TH *Thesis Title:* "Phenomenology and Cosmology of Supersymmetric Grand Unified Theories" *Supervisor:* Professor G. Lazarides
(*July 2000 - January 2002*	**Obligatory** military service.)
February 2002 - 2004	Post-doctoral position in "Scuola Internazionale Superiore di Studi Avanzanti" (SISSA), Trieste (Italy).
February 2004 - November 2005	Post-doctoral activity in the Physics Division of the School of Technology in the A.U.TH.
November 2005 - 2007	Research Associate in the School of Physics and Astronomy of the University of Manchester (United Kingdom).
March 2008 - September 2008	Post-doctoral position in the "Departamento de Fisica Aplicada" of the "Universidad de Huelva", Huelva (Spain).
October 2008 - June 2009	Post-doctoral position in the Physics Department of the University of Patras, Patras (Greece).
May 2010 - Today	Post-doctoral researcher in the Physics Department of the University of Cyprus, Nicosia (Cyprus).

C FELLOWSHIPS - SCHOLARSHIPS

April 1994 - July 1994	Diploma Thesis Scholarship from the Greek State Scholarship Foundation (I. K. Y) (Program "ERASMUS").
1995 - 1997	Greek Government research grant PENED/95 fellowship.
1998 - 2000	Ph. D Thesis Scholarship from the Greek State Scholarship Foundation (I. K. Y), after examinations.
November 2004 -2005	Postdoctoral Fellowship from the Greek State Scholarship Foundation (I. K. Y).

D Languages Spoken

Greek (native language), English and French.

E Computer Experiences

Operating systems	WINDOWS 2000/XP/Vista, LINUX
Programming languages	Fortran 77, Mathematica, LaTeX, Word, Excel, Power Point

F Participation to Schools and Conferences

July 1993	School of Advanced Physics, Iraclion (Crete).
September 1995, 1998	5th and 6th Hellenic School and Workshops on Elementary Particle Physics, Corfu (Greece).
April 1998, 1999	Workshop of Hellenic Society for the Study of High Energy Physics, Athens (Greece); Thessaloniki (Greece).
March 2002	ICTP Spring School on Superstrings and Related Matters, Trieste (Italy).
June 2002	ICTP Introductory School on String Theory, Trieste (Italy).
June 2002	ICTP Summer School on Astroparticle Physics and Cosmology, Trieste (Italy).
September 2002	School on Neutrino Physics and Astrophysics, Trieste (Italy).
June 2003	ICTP Summer School on Particle Physics, Trieste (Italy).
February 2005	ENTApP Visitor Programme and Workshop on Dark Matter, CERN, Geneva (Switzerland).
April 2005	Workshop of Hellenic Society for the Study of High Energy Physics, Thessaloniki (Greece).
September 2006	6th International Workshop on *"The Identification of Dark Matter"*, Rhodes (Greece).
March 2007	Workshop of Hellenic Society for the Study of High Energy Physics, Athens (Greece).
July 2007	European Physical Society Conference on High Energy Physics, Manchester (United Kingdom).
April 2008	Workshop of Hellenic Society for the Study of High Energy Physics, Olympia (Greece).
June 2008	4th International Workshop on *"The Dark Side of The Universe" (DSU 2008)*, Cairo (Egypt).
September 2008	Spanish Relativity Meeting: *"Physics and Mathematics of Gravitation" (ERE 2008)*, Salamanca (Spain).
May 2009	Workshop of Hellenic Society for the Study of High Energy Physics, NCSR "Dimokritos" (Greece);
April 2010, 2012	Thessaloniki (Greece); Ioannina (Greece).
September 2009, 2011 and 2012	9th, 11th and 12th Hellenic School and Workshops on Elementary Particle Physics and Gravity, Corfu (Greece).

G Talks

	"Yukawa Quasi-Unification and Neutralino Relic Density",
September 2002	*"Supersymmetry and the Early Universe"* mid-term Meeting,
	University of Oxford, Oxford (United Kingdom) and
October 2002	International Center for Theoretical Physics (ICTP), Trieste (Italy).
	"CDM Abundance: Standard versus non-Standard Scenaria",
April 2005	Workshop of Hellenic Society for the Study of High Energy Physics,
	Thesaloniki (Greece) and
February 2006	School of Physics and Astronomy, The University of Manchester,
	Manchester (United Kingdom).
September 2006	*"CDM Abundance in non-Stadard Cosmologies"*,
	6th International Workshop on *"The Identification of Dark Matter"*,
	Rhodes (Greece).
	"F-term Hybrid Inflation Followed by Modular Inflation",
March 2007	Workshop of Hellenic Society for the Study of High Energy Physics,
	National Technical University of Athens, Athens (Greece) and
April 2007	School of Physics and Astronomy, University of Southampton,
	Southampton (United Kigdom) and
June 2007	School of Physics and Astronomy, University of Oxford (England).
	"CDM and DE Problems in an Inflationary Universe",
May 2007	Division of Theoretical and Mathematical Physics,
November 2009	Physics Department, University of Patras (Patras) and
October 2007	Physics Division, Department of Applied Mathematical and Physical
	Sciences, National Technological University of Athens (Athens) and
January 2010	Institute of Nuclear Physics, NCSR "Dimocritos" (Greece)
November 2007	*"Reducing the Spectral Index of F-term Hybrid Inflation"*,
	Physics Department, Aristotle University of Thessaloniki.
	"Quintessential Kination and Thermal Abundance of e-WIMPs",
April 2008	Workshop of Hellenic Society for the Study of High Energy Physics,
	Olympia (Greece) and
June 2008	4th International Workshop on *"The Dark Side of The Universe" (DSU*
	2008), Cairo (Egypt).
September 2008	*"F-term Hybrid Inflation Followed by Modular Inflation"*,
	Spanish Relativity Meeting: *"Physics and Mathematics of Gravitation"*
	(ERE 2008), Salamanca (Spain).
May 2009	*"Hilltop F-term Hybrid Inflation With non-Minimal Kähler Potentials"*,
	Workshop of Hellenic Society for the Study of High Energy Physics,
	NCSR "Dimocritos" (Greece).
	"Tracking Quintessence, WIMP Relic Density, PAMELA and Fermi LAT",
September 2009	9th Hellenic School and Workshops on Elementary Particle Physics and
	Gravity, Corfu (Greece)
April 2010	Workshop of Hellenic Society for the Study of High Energy Physics,
	Thessaloniki (Greece).

Talks (Continued)

	"Combining F-term Hybrid Inflation With a PQ Phase Transition",
October 2010	Physics Department, University of Cyprus
January 2011	Section of Nuclear and Particle Physics, Physics Department, Aristotle University of Thessaloniki
May 2011	Bartol Research Institute, Department of Physics and Astronomy, University of Delaware, Newark, USA and
September 2011	11th Hellenic School and Workshops on Elementary Particle Physics and Gravity, Corfu (Greece).
	"Inflating with a Superheavy Higgs in a SUSY Pati-Salam Model",
January 2012	Division of Nuclear and Particle Physics, Physics Department, Aristotle University of Thessaloniki
April 2012	Workshop of Hellenic Society for the Study of High Energy Physics, Ioannina (Greece).
September 2012	*"Models of Non-Minimal Chaotic Inflation in Supergravity"*, 12th Hellenic School and Workshops on Elementary Particle Physics and Gravity, Corfu (Greece).

H Seminars Organized

September 2006 - May 2007	Organization of seminars on Astroparticle Physics in the Particle Physics Group of the Department of Physics and Astronomy of the University of Manchester.

I Teaching Experience

April - May 2009	Lecture Series to Postgraduate Students of Physics Department of the University of Patras on Dark Matter, Dark Energy and Inflation.
October - November 2011	Lecture Series to Undergraduate Students of the University of Cyprus within the course "Principles of Physics".

J Supervision of Research Students

September 2009 – Today	Participation in the supervision of the Ph. D student, N. Karagiannakis

K Visits

November 2010, 2011	Physics Division, School of Technology, A.U.TH
May 2011	Bartol Research Institute, Department of Physics and Astronomy, University of Delaware, Newark, USA.

L Refereeing Services

Active Referee for *J. Cosmol. Astropart. Phys.* and *Phys. Lett. B* since 2010.

M RECOMMENDATIONS

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  School of Technology,
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II RESEARCH PROPOSAL

My research interests lie on the interference of Particle Physics and Cosmology with emphasis on the problems of *Dark Matter* (DM), *Dark Energy* (DE) and Inflation. This research area has attracted much attention since, by now, the various cosmological can be determined with an unprecedented accuracy due to observational data from existing (e.g., WMAP) or expected (e.g., PLANCK) satellite experiments. On the other hand, the *Large Hadron Collider* (LHC) has already started exploring the TeV energy region and is expected to shed light on the Particle Physics beyond the *Standard Model* (SM). As a consequence, the symbiosis of Particle Physics and Cosmology becomes more and more precisely controlled.

The two cornerstones of the modern cosmo-particle theories are cosmic inflation and Supersymmetry (SUSY). Cosmic inflation has succeeded not only to overcome the horizon and flatness problems of the standard cosmology but also to provide a mechanism for the generation of the primordial fluctuations which seed the observed structure of the universe. On the other hand, in the context of SUSY, the *Minimal Supersymmetric SM* (MSSM) constitutes the most popular and promising particle model beyond the SM. As a bonus, the *Lightest Supersymmetric Particle* (LSP) arises as natural CDM candidate. The role of LSP can be played by the *Weakly Interacting Massive Particles* (WIMPs) χ with prominent representative the lightest neutralino $\tilde\chi$ or the *extremely WIMPs* (*e*-WIMPs) (e.g., the axino, $\tilde a$ and the gravitino, $\widetilde G$). Within more advanced theories scalar fields with runaway potentials emerge which can be qualified as quintessence for the explanation of DE.

A SCIENTIFIC BACKGROUND

My contribution to this field of research is concentrated on the following subjects (the references in the brackets are referred to the bibliography quoted in the end of this section and to my publications in sections III A, B and C):

1. COMPUTATION OF THE RELIC DENSITY, $\Omega_X h^2$, OF CDM CANDIDATES. Assuming the *standard cosmological evolution* (SC) before *Big-Bang nucleosynthesis* (BBN) and working in the framework of the *Constrained MSSM* (CMSSM), we calculated $\Omega_{\tilde\chi} h^2$ (where $\tilde\chi$ turns out to be a pure B-ino) including not only annihilation but also coannihilation effects of $\tilde\chi$ with the lightest stau and other sleptons which happen to have comparable masses [A1 – A4, C1]. The inclusion of these processes is of crucial importance for reducing $\Omega_{\tilde\chi} h^2$ to an acceptable level. The calculation was improved and explicitly compared with other independent calculations [A4, C2]. $\Omega_X h^2$ with $X = \widetilde G$ or $\tilde a$ due to thermal production has been also estimated [A12, A14]. In this case, a novel calculation of the $\tilde a$ production rate by scatterings at low temperature has been presented [A12].

2. COSMO-PHENOMENOLOGICAL ANALYSIS OF SOME VERSIONS OF MSSM. In our investigation we included [A2 – A6, A18, A22, B1 – B3, B12] constraints originating from (i) the radiative electroweak symmetry breaking, (ii) the SUSY corrections to the lighter CP-even Higgs boson, b-quark and τ-lepton mass, (iii) the B-Physics, (iv) the muon anomalous magnetic moment (v) the CDM abundance of the universe. Imposing a simultaneous fulfilment of the above constraints, we restricted strongly the parameter space of several versions of the MSSM. In particular, we considered the MSSM supplemented by exact [A1, A2], quasi [A4, A5, A18, A22] or $b - \tau$ [A6] *Yukawa (coupling) Unification* (YU). Acceptable solutions are achieved, employing a moderate deviation [A4, A5, A22] from the exact YU with universal boundary conditions for the soft SUSY breaking parameters or a convenient departure [A6] from the universal gaugino and sfermion masses. On the other hand, the MSSM with universal boundary conditions from the Hořava-Witten theory does not favor any YU regime [A3].

3. PHENOMENOLOGY OF QUINTESSENTIAL MODELS. We studied the quintessential models based on the exponential [A8, A9, A12, B6] and the inverse-power [A14, A15, B8] potential. In the

latter case we also took into account a Hubble-induced mass correction. We restricted the models, so as to obtain an early *kination dominated* (KD) phase consistently with observational constraints originating from BBN, the inflationary scale, the present acceleration of the universe and the dark-energy-density parameter. Although both models can become compatible with observations, the second one [A14, A15, B8] possesses sizeable regions of the parameter space where a tracker scaling solution can be reached sufficiently early to alleviate the coincidence problem.

4. CDM ABUNDANCE ($\Omega_X h^2$) WITHIN NON-STANDARD COSMOLOGICAL SCENARIA (NSC). The calculation of $\Omega_X h^2$ crucially depends on the adopted assumption about the dominant component of the universe during the decoupling of WIMPs, χ, or the thermal production of *e*-WIMPs, ψ. The usual assumption – made in the points IIA1 and IIA2 – is that this occurs during the radiation dominated era which commences after the primordial inflation. However our current knowledge for the universal history before BBN allows for other possibilities too. E.g., we considered [A7 – A9, A14, A15, B4], without adopting a specific particle model, the decoupling of a WIMP χ during either a decaying-particle dominated phase or a KD phase. We found [A7] that a low reheat temperature, in the range $(1 - 20)$ GeV, significantly facilitates the achievement of an acceptable $\Omega_\chi h^2$. On the contrary, the presence of a pure KD era can lead [A8] to an enhancement of $\Omega_\chi h^2$, up to three orders of magnitude, *with respect to* (w.r.t) the SC. The latter enhancement can be avoided in the case of a KD reheating [A9] and can be weakened in the case of a modified KD era [A14]. As regards the thermal abundance of *e*-WIMPs, $\Omega_\psi h^2$, we found [A12, A14, B6] that a KD era decreases $\Omega_\psi h^2$ w.r.t the SC. This decrease turns out to be less drastic in the case of a modified KD era [A14].

5. DIRECT AND INDIRECT DETECTION OF CDM. In the version of MSSM with $b - \tau$ [A6] and quasi YU [A18, A22, B3] we checked the detectability of the LSP calculating the $\tilde\chi$-proton cross sections and the detection rate of $\tilde\chi$. Moreover, we showed that the enhancement of $\Omega_\chi h^2$ created within the nSC can reconcile [A15] the observational data on $\Omega_\chi h^2$ and the $e^\pm$ cosmic rays in the case that the WIMPs annihilate predominantly to $\mu^+\mu^-$.

6. ANALYSIS OF INFLATIONARY MODELS. I was involved in the study of several extensions of the MSSM, in which *F-term Hybrid Inflation* (FHI) [A10, A11, A13, A17, B5, B11, B13] and *non-Minimal Chaotic Inflation* (nMCI) [A18, A20, A21] are more or less 'naturally' realized – possible realizations of non-SUSY chaotic or hybrid inflation are proposed in Ref. [A16]. These models arise from the embedding of MSSM in SUSY *Grand Unified Theories* (GUT) and have a rich structure, linking together the μ-problem of MSSM, baryogenesis via non-thermal leptogenesis, neutrino masses and the $\widetilde{G}$ constraint [A20, A21, B10]. The (scalar) spectral index of FHI can be reduced to an acceptable level with the utilization of a quasi-canonical Kähler potentials with or without extra fields with no-scale-type Kähler potential [A13, B13] or restricting the number of e-foldings that the pivot scale suffered during FHI [A11, B5]. On the other hand, nMCI [A18, A20, A21] turns out to be consistent with the observations and, as a bonus, avoids the production of cosmological defects but it requires mildly tuned higher order terms in the employed Kähler potential.

B RESEARCH OBJECTIVES

Based on the scientific experience above, I plan to focus on the following subjects:

1. ANALYSIS OF SEVERAL VERSIONS OF THE VERY CMSSM. The CMSSM [A4, A5, A19, A22] can be further restricted [1] if we impose extra relations (originating from minimal Supergravity) between the trilinear and bilinear soft SUSY breaking parameters at GUT scale, A_0 and B_0 respectively. Taking into account this extra condition (which is usually not included in CMSSM) we get the Very CMSSM which is certainly the most predictive and well-motivated version of MSSM and can become consistent [2] with the LHC results on the Higgs mass. We can investigate, applying the criteria described in the point A2, if this model can be supplemented with some kind of YU or if it can

be successfully combined with GUT-inspired [3] non-universal gaugino masses or if it supports axino as CDM candidate.

2. SPLIT SUSY AND YU. The recently released results of LHC places low energy SUSY under pressure since a 125 GeV Higgs mass can be achieved with a rather heavy mass sparticle spectrum. In split SUSY [4] one supposes that the spectrum of superpartners is split, having scalars at higher mass scales, whereas gauginos and higgsinos remain light, typically thanks to an approximate R-symmetry. In this way, split SUSY is kept consistent with the unification of the gauge coupling constants and the candidacy of $\tilde{\chi}$ as CDM particle remains valid. We plan to restrict further models of split SUSY embedding them in a GUT based on the Pati-Salam gauge group which predicts [A4] relations between the Yukawa coupling constants at the GUT scale. In a such scenario, the parameter $tan\beta$ is constrained naturally to relatively large values and therefore, we expect [2] that the LHC favored values for the Higgs mass can be achieved with a relatively low (~ 100 TeV) sparticle spectrum.

3. ASYMMETRIC DARK MATTER (ADM) AND $B-L$ NMCI. ADM has been proposed in order to explain the similarity of the baryonic and CDM relic densities and interpret the reported excess on cosmic-ray fluxes through CDM annihilation in the galaxy. We plan to focus on bosonic ADM taking into account constraints [5] from black holes formation in neutron stars. ADM can be stabilized [6] by a $\mathbb{Z}_2$ symmetry which remains unbroken after the breaking of a gauged $B-L$ symmetry and can be nicely connected, through non-thermal leptogenesis [7], with the GUT scale inflationary models. In the SUSY framework, the generation of a mass term for ADM is [8] similar to the generation of μ term of MSSM and is based to superpotential terms of the form $SX\bar{X}$, where S is a gauge singlet and X and $\bar{X}$ are the superfields which represent the two components of ADM. Indeed, the above term in conjunction with the usual term, $S(\Phi\bar{\Phi}-M^2)$, appearing in both FHI and nMCI (where Φ and $\bar{\Phi}$ are superheavy higgs superfields and M is a superheavy mass scale) provides [9] masses of order 1 TeV for X and $\bar{X}$. To avoid complications with the stability of the system above we need to invoke a bilinear superpotential term comprised by gauge singlets so that to achieve nMCI as in Ref. [A21]. Therefore, we need to invoke a bilinear superpotential term comprised by gauge singlets so that to achieve nMCI. Moreover, the term $SX\bar{X}$ can be combined [A10] with the term SH_uH_d in order to give a adjustable annihilation channel of $X\bar{X}$ - where H_u and H_d are the $SU(2)_L$ doublet superfields which couple to the up and down type quarks respectively.

4. ELECTROWEAK VACUUM STABILITY AND $B-L$ NMCI. The SM Higgs potential can develop an instability at large field values for the LHC favored range of the Higgs boson mass. However, a heavy scalar SM-singlet with a large vacuum expectation value and quartic interaction with the Higgs doublet can evade the potential instability [10]. We can check if this singlet can be identified with a superheavy SM-singlet Higgs involved in the breaking of $B-L$ symmetry at a high scale and playing also the role of inflaton [11] in $B-L$ nMCI. Its vacuum expectation value can be further restricted by the requirement of the successful non-thermal leptogenesis and the generation of the correct neutrino masses. Extension of the model in order to incorporate also ADM and a resolution of the hierarchy problem [12, 13] may be also considered.

5. DE, CDM AND BARYON NUMBER ABUNDANCE WITHIN SCALAR-TENSOR GRAVITY (ST). ST provides a natural framework in which massless scalars – such as quintessence – may appear in the gravitational sector of a theory without being phenomenologically dangerous. Models have been proposed which possesses two attractor mechanisms at the same time: one towards tracker solutions [A14] – which accounts for the present evolution of the universe – and one towards general relativity – which makes quintessence observationally safe. As shown in Ref. [14], ST can enhance $\Omega_\chi h^2$ w.r.t the SC. The modification of $\Omega_\psi h^2$ (where ψ is a e-WIMP) w.r.t the SC can be also analyzed. The essential difference between ST and the cases considered in point IIA3 is that the alterations to $\Omega_X h^2$ are due to modifications to the Friedmann equation and not to the temporal domination by an extra component

on the universal energy density. As a bonus, ST can activate the mechanism of gravitational [15] or electroweak [16] baryogenesis which is inapplicable in the conventional radiation dominated epoch.

6. QUINTESSENTIAL INFLATION. The kination regime, mentioned in point IIA3, becomes an indispensable ingredient of a quintessence model when a single scalar field plays the role of both the inflaton and quintessence. Several problems have to be overcome in order this scheme to be realized. We have to pay special attention to the termination of inflation – Ref. [17] opens new possibilities on this point –, the creation of successful reheating and the possible overproduction of gravitational waves [18] during the transition from inflation to KD era. It would be important to investigate the following novel issues: (i) the consideration of dissipation effects in order to achieve warm quintessence and (ii) the deliberation of the quintessential potential from the requirement of the generation of the primordial curvature perturbations; the latter can be produced during an earlier stage of FHI [A11].

7. D-TERM HYBRID INFLATION (DHI). The tension between WMAP data and the models of FHI, outlined in point IIA4, is also present in the case of DHI and can be overcome using, e.g., a non-minimal Kähler potential [19] or gauge kinetic function [20]. Moreover, the inflationary scale is to be well below the GUT scale, so that the cosmic strings' contribution to the power spectrum of the curvature perturbations is compatible with the WMAP data. To avoid the production of strings in the end of DHI we can construct models in which the $U(1)$ gauge symmetry is already broken during DHI. This effect can be achieved by adding non-renormalizable terms in the superpotential, as in the cases of shifted or smooth FHI [A11, A13, B5, B13].

REFERENCES

[1] J.R. Ellis, K.A. Olive, Y. Santoso and V.C. Spanos, *Phys. Rev. D* ***70***, *055005 (2004)* [hep-ph/0405110].
[2] A. Arbey *et al.*, *Phys. Lett. B* ***708***, *162 (2012)* [arXiv:1112.3028].
[3] S.P. Martin, *Phys. Rev. D* ***79***, *095019 (2009)* [arXiv:0903.3568].
[4] N. Arkani-Hamed and S. Dimopoulos, *J. High Energy Phys.* ***06***, *073 (2005)* [hep-th/0405159]; G.F. Giudice and A. Romanino, *Nucl. Phys.* ***B699***, *65 (2004)* [hep-ph/0406088].
[5] S.D. McDermott, H.B. Yu and K.M. Zurek, *Phys. Rev. D* ***85*** , *023519 (2012)* [arXiv:1103.5472]; C. Kouvaris and P. Tinyakov, *Phys. Rev. Lett.* ***107***, *091301 (2011)* [arXiv:1104.0382].
[6] M. Ibe, S. Matsumoto and T.T. Yanagida, *Phys. Lett. B* ***708***, *112 (2012)* [arXiv:1110.5452].
[7] N. Haba, S. Matsumoto and R. Sato, *Phys. Rev. D* ***84***, *055016 (2011)* [arXiv:1101.5679].
[8] D.E. Kaplan, M.A. Luty and K.M. Zurek, *Phys. Rev. D* ***79***, *115016 (2009)* [arXiv:1101.5679].
[9] G.R. Dvali, G. Lazarides and Q. Shafi, *Phys. Lett. B* ***424***, *259 (1998)* [hep-ph/9710314].
[10] J. Elias-Miro *et al.*, *J. High Energy Phys.* ***1206***, *031 (2012)* [arXiv:1203.0237].
[11] N. Okada, M.U. Rehman and Q. Shafi, *Phys. Lett. B* ***701***, *520 (2011)* [arXiv:1102.4747].
[12] G. Dvali and M. Redi, *Phys. Rev. D* ***77***, *045027 (2008)* [arXiv:0710.4344].
[13] K.A. Meissner and H. Nicolai, *Phys. Lett. B* ***660***, *260 (2008)* [arXiv:0710.2840].
[14] R.Catena, N.Fornengo, A.Masiero, M.Pietroni and F.Rosati, *Phys. Rev. D* ***70***, *063519 (2004)* [astro-ph/0403614].
[15] H. Davoudiasl *et al.*, *Phys. Rev. Lett.* ***93***, *201301 (2004)* [hep-ph/0403019].
[16] M. Joyce and T. Prokopec, *Phys. Rev. D* ***57***, *6022 (1998)* [hep-ph/9709320].
[17] K. Nakayama and F. Takahashi, *J. Cosmol. Astropart. Phys.* ***11***, *009 (2010)* [arXiv:1008.2956].
[18] D.J.H. Chung and P. Zhou, *Phys. Rev. D* ***82***, *024027 (2010)* [arXiv:1003.2462].
[19] C-M. Lin and J. McDonald, *Phys. Rev. D* ***77***, *063529 (2008)* [arXiv:0710.4273].
[20] C.-M. Lin and K. Cheung, *J. Cosmol. Astropart. Phys.* ***03***, *012 (2009)* [arXiv:0812.2731].

III List of Publications

A Publications In Refereed Journals

[1] M.E. Gómez, G. Lazarides and C. Pallis,
Supersymmetric Cold Dark Matter with Yukawa Unification,
Phys. Rev. D ***61***, *123512 (2000)* [hep-ph/9907261].
Number of citations: 224.

[2] M.E. Gómez, G. Lazarides and C. Pallis,
Yukawa Unification, $b \to s\gamma$ and Bino-Stau Coannihilation,
Phys. Lett. B ***487***, *313 (2000)* [hep-ph/0004028].
Number of citations: 174.

[3] S. Khalil, G. Lazarides and C. Pallis,
Cold Dark Matter and $b \to s\gamma$ in the Hořava-Witten Theory,
Phys. Lett. B ***508***, *327 (2001)* [hep-ph/0005021].
Number of citations: 22.

[4] M.E. Gómez, G. Lazarides and C. Pallis,
Yukawa Quasi-Unification,
Nucl. Phys. ***B638***, *165 (2002)* [hep-ph/0203131].
Number of citations: 86.

[5] M.E. Gómez, G. Lazarides and C. Pallis,
Yukawa Quasi-Unification with $\mu < 0$,
Phys. Rev. D ***67***, *097701 (2003)* [hep-ph/0301064].
Number of citations: 42.

[6] C. Pallis,
$b - \tau$ Unification with Gaugino and Sfermion Mass non-Universality,
Nucl. Phys. ***B678***, *398 (2004)* [hep-ph/0304047].
Number of citations: 57.

[7] C. Pallis,
Massive Particle Decay and Cold Dark Matter Abundance,
Astropart. Phys. ***21***, *689 (2004)* [hep-ph/0402033].
Number of citations: 45.

[8] C. Pallis,
Quintessential Kination and Cold Dark Matter Abundance,
J. Cosmol. Astropart. Phys. ***10***, *015 (2005)* [hep-ph/0503080].
Number of citations: 35.

[9] C. Pallis,
Kination-Dominated Reheating and Cold Dark Matter Abundance,
Nucl. Phys. ***B751***, *129 (2006)* [hep-ph/0510234].
Number of citations: 29.

[10] B. Garbrecht, C. Pallis and A. Pilaftsis,
Anatomy of F_D-term Hybrid Inflation,
J. High Energy Phys. ***12***, *038 (2006)* [hep-ph/0605264].
Number of citations: 41.

[11] G. LAZARIDES AND C. PALLIS,
Reducing the Spectral Index of F-term Hybrid Inflation Through a Complementary Modular Inflation,
Phys. Lett. B ***651***, *216 (2007)* [hep-ph/0702260].
Number of citations: 17.

[12] M.E. GÓMEZ, S. LOLA, C. PALLIS AND J. RODRÍGUEZ-QUINTERO,
Quintessential Kination and Thermal Production of Gravitinos and Axinos,
J. Cosmol. Astropart. Phys. ***01***, *029 (2009)* [arXiv:0809.1859].
Number of citations: 14.

[13] C. PALLIS,
Kähler Potentials for Hilltop F-term Hybrid Inflation,
J. Cosmol. Astropart. Phys. ***04***, *024 (2009)* [arXiv:0902.0334].
Number of citations: 19.

[14] S. LOLA, C. PALLIS AND E. TZELATI,
Tracking Quintessence and Cold Dark Matter Candidates,
J. Cosmol. Astropart. Phys. ***11***, *014 (2009)* [arXiv:0907.2941].
Number of citations: 6.

[15] C. PALLIS,
Cold Dark Matter Abundance in non-Standard Cosmologies, PAMELA, ATIC and Fermi LAT,
Nucl. Phys. ***B831***, *217 (2010)* [arXiv:0909.3026].
Number of citations: 20.

[16] C. PALLIS,
Non-Minimally Gravity-Coupled Inflationary Models,
Phys. Lett. B ***692***, *287 (2010)* [arXiv:1002.4765].
Number of citations: 17.

[17] G. LAZARIDES AND C. PALLIS,
F-term Hybrid Inflation Followed by a Peccei-Quinn Phase Transition,
Phys. Rev D ***82***, *063535 (2010)* [arXiv:1007.1558].
Number of citations: 8.

[18] C. PALLIS AND N. TOUMBAS,
Non-Minimal Sneutrino Inflation, Peccei-Quinn Phase Transition and non-Thermal Leptogenesis,
J. Cosmol. Astropart. Phys. ***02***, *019 (2011)* [arXiv:1101.0325].
Number of citations: 7.

[19] N. KARAGIANNAKIS, G. LAZARIDES AND C. PALLIS,
CMSSM with Yukawa Quasi-Unification Revisited,
Phys. Lett. B ***704***, *43 (2011)* [arXiv:1107.0667].
Number of citations: 8.

[20] C. PALLIS AND N. TOUMBAS,
Non-Minimal Higgs Inflation and non-Thermal Leptogenesis in a Supersymmetric Pati-Salam Model,
J. Cosmol. Astropart. Phys. ***12***, *002 (2011)* [arXiv:1108.1771].
Number of citations: 3.

[21] C. PALLIS AND Q. SHAFI,
Non-Minimal Chaotic Inflation, Peccei-Quinn Phase Transition and non-Thermal Leptogenesis,
Phys.Rev. D ***86****, 023523 (2012)* [arXiv:1204.0252].
Number of citations: 2.

[22] N. KARAGIANNAKIS, G. LAZARIDES AND C. PALLIS,
Constrained Minimal Supersymmetric Standard Model
with Generalized Yukawa Quasi-Unification,
Submitted to Phys. Rev. D, arXiv:1212.0517.
Number of citations: 0.

Total number of citations: 876.

B CONTRIBUTIONS TO BOOKS AND CONFERENCE PROCEEDINGS

[1] M.E. GÓMEZ AND C. PALLIS,
MSSM With Yukawa Quasi-Unification,
Published in "Hamburg 2002, Supersymmetry and Unification of Fundamental Interactions", pp. 1224-1230 [hep-ph/0303094].
Number of citations: 4.

[2] G. LAZARIDES AND C. PALLIS,
Yukawa Quasi-Unification and Inflation,
Published in "Vrnjacka Banja 2003, Mathematical, Theoretical and Phenomenological Challenges Beyond the Standard Model", pp. 56-70 [hep-ph/0404266].
Number of citations: 9.

[3] G. LAZARIDES AND C. PALLIS,
Supersymmetric Dark Matter, Inflation and Yukawa Quasi-Unification,
Published in "Dark Matter: New Research", edited by J.Val Blain (Nova Science Publishers Inc., Hauppauge, New York) 2005, pp. 1-38 [hep-ph/0406081].
Number of citations: 12.

[4] C. PALLIS,
CDM Abundance in non-Standard Cosmologies,
Published in "The Identification of Dark Matter", pp. 602-608 [hep-ph/0610433].
Number of citations: 7.

[5] C. PALLIS,
Reducing the Spectral Index of F-term Hybrid Inflation,
Published in "High Energy Physics Research Advances", edited by T.P. Harrison and R.N. Gonzales (Nova Science Publishers Inc., Hauppauge, New York) 2008, pp. 1-38 [arXiv:0710.3074].
Number of citations: 11.

[6] M.E. GÓMEZ, S. LOLA, C. PALLIS AND J. RODRÍGUEZ-QUINTERO,
Quintessential Kination and Thermal Production of SUSY e-WIMPs,
AIP Conf. Proc. ***1115****, 157 (2009)* [arXiv:0809.1982].
Number of citations: 2.

[7] C. PALLIS,
F-term Hybrid Inflation Followed by Modular Inflation,
AIP Conf. Proc. ***1122****, 368 (2009)* [arXiv:0812.0249].
Number of citations: 4.

[8] C. PALLIS,
Tracking Quintessence, WIMP Relic Density, PAMELA and Fermi LAT,
Fortsch. Phys. ***58****, 787 (2010)* [arXiv:1001.2870].
Number of citations: 2.

[9] N. KARAGIANNAKIS, G. LAZARIDES AND C. PALLIS,
Dark Matter and Higgs Mass in the CMSSM with Yukawa Quasi-Unification,
J. Phys. Conf. Ser. ***384****, 012012 (2012)* [arXiv:1201.2111]
Number of citations: 18.

[10] C. PALLIS AND N. TOUMBAS,
Leptogenesis and Neutrino Masses in an Inflationary SUSY Pati-Salam Model,
Prepared for the edited collection "Open Questions in Cosmology" (InTech, ISBN 980-953-307-658-9) edited by Dr. Gonzalo J. Olmo [arXiv:1207.3730].
Number of citations: 2.

[11] C. PALLIS,
Combining F-Term Hybrid Inflation With a Peccei-Quinn Phase Transition,
PoS ***CORFU2011****, 028 (2012)* [arXiv:1207.6351].
Number of citations: 1.

[12] N. KARAGIANNAKIS, G. LAZARIDES AND C. PALLIS,
CMSSM with Yukawa quasi-unification,
PoS ***CORFU2011****, 023 (2011).*
Number of citations: 1.

[13] R. ARMILLIS AND C. PALLIS,
Implementing Hilltop F-term Hybrid Inflation in Supergravity,
Prepared for the Editor Collection "Recent Advances in Cosmology" (Nova Science Publishers, Inc.)
arXiv:1211.4011.
Number of citations: 0.

Total number of citations: 73.

C MISCELLANEOUS

[1] CONSTANTINOS PALLIS,
Phenomenology and Cosmology of Supersymmetric Grand Unified Theories,
Phd thesis (in Greek) [hep-ph/0007114].
Number of citations: 0.

[2] C. PALLIS AND M.E. GÓMEZ,
Yukawa Quasi-Unification and Neutralino Relic Density,
Invited review talk at the EUnet "Supersymmetry and the Early Universe" mid-term Meeting, Oxford, United Kingdom, 26-29 September 2002 [hep-ph/0303098].
Number of citations: 17.

Total number of citations: 17[1].

[1] *The citation data have been received on 1st December 2012 by the link:*
http://inspirehep.net.