

ΒΙΟΓΡΑΦΙΚΟ ΣΗΜΕΙΩΜΑ

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Γεννήθηκε:	1956 στη Πλατανούσσα Ιωαννίνων.
Οικογενειακή Κατάσταση:	Έγγαμος, δυο παιδιά.
Σπουδές:	1. Πτυχίο Φυσικού (1980), Παν/μιο Ιωαννίνων, Τμήμα Φυσικής. 2. Διδακτορικό Δίπλωμα Φυσικής (1990), Παν/μιο Ιωαννίνων, Τμήμα Φυσικής.
Τρέχουσα Θέση:	Αναπληρωτής Καθηγητής (από το 2004-σήμερα), Πανεπιστήμιο Ιωαννίνων, Τμήμα Φυσικής.
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Προηγούμενες Θέσεις:

1. 1980-1990: Επιστημονικός Συνεργάτης, Παν/μιο Ιωαννίνων, Τμήμα Φυσικής.
2. 1985-1986: Στρατιωτική θητεία.
3. 1986-1988: Επισκέπτης Ερευνητής στο Fysicum, Παν/μιο Στοκχόλμης, Σουηδία.
4. 1991-1995: Λέκτορας, Παν/μιο Ιωαννίνων, Τμήμα Φυσικής.
5. 1996-2004: Επίκουρος Καθηγητής, Παν/μιο Ιωαννίνων, Τμήμα Φυσικής.
6. 1993 και 2007: Corresponding Fellow, CERN, Γενεύη, Ελβετία.
7. 1980-σήμερα: Unpaid Associate, CERN, Γενεύη, Ελβετία.

ΕΡΕΥΝΗΤΙΚΕΣ ΚΑΙ ΔΙΔΑΚΤΙΚΕΣ ΔΡΑΣΤΗΡΙΟΤΗΤΕΣ (Συνοπτικά)

Γνωστικό-ερευνητικό αντικείμενο και ενδιαφέροντα: Πειραματική Φυσική Υψηλών Ενεργειών και εφαρμογές, με εμπειρία σε συστήματα DAQ, ανιχνευτές πυριτίου και ηλεκτρονικά για: πειράματα Φυσικής Υψηλών Ενεργειών (ΦΥΕ), εφαρμογές σε βιοϊατρική, στο περιβάλλον κλπ. Από το 1980 συμμετοχή στα πειράματα ΦΥΕ: UA5, CPLEAR, DIRAC, CMS στο CERN της Ελβετίας. Οι ερευνητικές δραστηριότητες περιλαμβάνουν ανάπτυξη ανιχνευτικών διατάξεων για στοιχειώδη σωματίδια βασισόμενες σε ανιχνευτές πυριτίου, ανάπτυξη ηλεκτρονικών και μικροηλεκτρονικών για ανιχνευτές πυριτίου, ανάπτυξη συστημάτων σκανδαλισμού και συλλογής δεδομένων σε πειράματα ΦΥΕ, προσομοιώσεις γεγονότων αλληλεπιδράσεων και ανιχνευτικών συστημάτων και ανάλυση δεδομένων πειραμάτων ΦΥΕ.

Συμμετοχή σε αντίστοιχα ερευνητικά προγράμματα που χρηματοδοτούνται από την Ευρωπαϊκή Ένωση, την ΓΓΕΤ κλπ., ως συντονιστής ή ως ερευνητής.

Μέλος της Ελληνικής Επιτροπής CERN της ΓΓΕΤ από το 2015 και πρόσφατα εκπρόσωπος ILO της Ελλάδας στο CERN.

Η εν λόγω έρευνα έχει αποφέρει περισσότερες από 700 επιστημονικές δημοσιεύσεις σε διεθνή επιστημονικά περιοδικά με κριτές με περισσότερες από 15000 αναφορές (h-index ~55).

Συμμετοχή στην διδασκαλία βασικών και ειδικών μαθημάτων Φυσικής και μεταπτυχιακών μαθημάτων στην Φυσική και στα ηλεκτρονικά. Στο διάστημα 2005-σήμερα Διευθυντής και διδάσκων του Προγράμματος Μεταπτυχιακών Σπουδών στις Σύγχρονες Ηλεκτρονικές Τεχνολογίες του Τμήματος Φυσικής του Πανεπιστημίου Ιωαννίνων και επιβλέπων περισσότερων από 15 Μεταπτυχιακών Διπλωματικών Εργασιών στο εν λόγω πρόγραμμα. Επιβλέπων και μέλος τριμελών συμβουλευτικών επιτροπών σε περισσότερες από πέντε διδακτορικές διατριβές. Επίσης επιβλέπων σε περισσότερες από 10 πτυχιακές διπλωματικές εργασίες του Τμήματος Φυσικής.

ΑΝΑΛΥΤΙΚΟΤΕΡΑ:
ΔΙΔΑΚΤΙΚΕΣ ΔΡΑΣΤΗΡΙΟΤΗΤΕΣ

Διδασκαλία (1980-σήμερα) στο πρόγραμμα προπτυχιακών σπουδών του Τμήματος Φυσικής του Πανεπιστημίου Ιωαννίνων, στο Πρόγραμμα Μεταπτυχιακών Σπουδών (ΠΜΣ) Φυσικής, στο ΠΜΣ Σύγχρονες Ηλεκτρονικές Τεχνολογίες(ΣΗΤ), στο ΠΜΣ Τηλεπικοινωνιακές Εφαρμογές του ίδιου Τμήματος. Επίσης διδασκαλία στο Πρόγραμμα Σπουδών Επιλογής «Επιστήμη και Πολιτισμός» του Πανεπιστημίου Ιωαννίνων στο τέλος της δεκαετίας του 1990.

Συγκεκριμένα

- στο προπτυχιακό πρόγραμμα του Τμήματος Φυσικής δίδαξα: Ασκήσεις Γενικής Φυσικής στο τμήμα Φυσικής και Χημείας, Εργαστηριακές ασκήσεις Ηλεκτρισμού-Μαγνητισμού και Εργαστηριακές ασκήσεις κυμάτων στο τμήμα Φυσικής, Σύγχρονη φυσική (Φυσική Στερεάς κατάστασης-Πυρηνική φυσική-Φυσική στοιχειωδών σωματίων –Κοσμολογία), Γλώσσες προγραμματισμού (γλώσσα C), Ηλεκτρισμός, Μαγνητισμός, Εφαρμογές διαδικτύου (επιλογής)
- στο Πρόγραμμα Μεταπτυχιακών Σπουδών Φυσικής του Τμήματος Φυσικής δίδαξα: Φυσική Στοιχειωδών σωματίων
- στο πρόγραμμα Μεταπτυχιακών Σπουδών στις Σύγχρονες Ηλεκτρονικές Τεχνολογίες: Μικροηλεκτρονική-εργαστήρια, Μικροελεγκτές-assembly-εργαστήρια και Ηλεκτρονική σχεδίαση.
- Στο πρόγραμμα Σπουδών Επιλογής «Επιστήμη και πολιτισμός» το μάθημα Ηλεκτρονικοί υπολογιστές.
- Στο Τμήμα φιλολογίας του ΠΙ το μάθημα επιλογής: Δίκτυα-Επικοινωνίες.

Επιβλέπων σε αρκετές προπτυχιακές διπλωματικές εργασίες, με θέματα προσομοίωσης ανιχνευτικών συστημάτων σωματιδίων, ηλεκτρονικών ανάγνωσης ανιχνευτικών συστημάτων κλπ.

Επιβλέπων ή μέλος της τριμελούς συμβουλευτικής επιτροπής στις εξής Διδακτορικές διατριβές του Τμήματος Φυσικής:

- α) 1997, Κ. Κλουκίνας : Ανάπτυξη Ηλεκτρονικών Συστημάτων Λήψης Δεδομένων και Ελέγχου για ένα Πείραμα Συγκρουομένων Δεσμών pp σε Ενέργεια Κέντρου Μάζας 14 TeV (Πείραμα CMS στον επιταχυντή LHC).
- β) 2001, Α. Λαγογιάννης : Μελέτη των αντιδράσεων ${}^6\text{He}(\rho, p){}^6\text{He}$, ${}^6\text{He}(\rho, p'){}^6\text{He}$ με τον ανιχνευτή MUST.
- γ) 2006, Α. Ασημίδης: Σύστημα λήψης και επεξεργασίας δεδομένων (DAQ) για ανίχνευση ακτινών-Χ με μικρολωριδιακούς αισθητήρες πυριτίου, βασισμένο σε PC
- δ) 2007, Β. Χριστοφιλάκης: Επαναπροσδιοριζόμενα ασύρματα τηλεπικοινωνιακά συστήματα.
- ε) 2006, Π. Βηχούδης: Ανάπτυξη ηλεκτρονικού συστήματος λήψης δεδομένων και ελέγχου των αισθητήρων πυριτίου του ανιχνευτικού συστήματος Preshower του πειράματος CMS στο CERN.
- στ) 2008, Γ. Σιδηρόπουλος: Ανάπτυξη γεννήτριας σημάτων σκανδαλισμού και κυκλωμάτων αφαίρεσης υποβάθρου και θορύβου ψηφιοποιημένου σήματος σε πειράματα Φυσικής Υψηλών Ενέργειών (επιβλέπων).
- ζ) 2014, Κ. Ζέρβα: Μηχανισμοί αντιδράσεων με ασθενικά δέσμιους πυρήνες σε ενέργειες κοντά στο φράγμα Coulomb.
- η) 2018, Ν. Λούκας: Αναβάθμιση του ηλεκτρονικού συστήματος σκανδαλισμού του πειράματος CMS στο CERN της Ελβετίας (επιβλέπων).
- θ) Δ.-Μ. Κολοτούρος: Ανάπτυξη συστήματος σκανδαλισμού-συγχρονισμού και ελέγχου πειραμάτων Φυσικής Υψηλών Ενέργειών νέας γενιάς βασισμένο σε παθητικά οπτικά δίκτυα. (στη φάση εκπόνησης).

Επιβλέπων στις εξής Μεταπτυχιακές Διπλωματικές Εργασίες των ΠΜΣ του Τμήματος Φυσικής (κυρίως του ΠΜΣ-ΣΗΤ):

- α) Α. Παγώνης : Σχεδιασμός και ανάπτυξη διεπαφών ATM/PDH και CPU/αισθητήρα.

- Ιωάννινα 1999.
- β) Ε. Λαγός : Ανάπτυξη μονάδας VME για την παραγωγή σημάτων ελέγχου συστήματος FE που χρησιμοποιείται για την ανάγνωση μικρολωριδιακών ανιχνευτών πυριτίου. Ιωάννινα 2000.
- γ) Β. Χριστοφιλάκης: Σύστημα μεταφοράς φυσικών μετρήσεων. Ιωάννινα 2000.
- δ) Κ. Προύσκας: Ανάπτυξη συστήματος ελέγχου και ανάγνωσης υποσυστημάτων μικρολωριδιακών αισθητήρων πυριτίου-αναλογικών ηλεκτρονικών. Ιωάννινα 2002
- ε) Ο. Μητρόπουλος: Ανάπτυξη σε FPGA ηλεκτρονικού κυκλώματος για την αφαίρεση υποβάθρου και θορύβου ψηφιοποιημένου σήματος που προέρχεται από μικρολωριδιακούς ανιχνευτές πυριτίου. Ιωάννινα 2001
- στ) Ν. Τσαγκούριας: Ανάπτυξη μονάδας VME για την παραγωγή σημάτων ρύθμισης σε σύστημα ανάγνωσης μικρολωριδιακών ανιχνευτών πυριτίου. Ιωάννινα 2001
- ζ) Γ. Σιδηρόπουλος: Ανάπτυξη κάρτας PCI διαύλου I²C για τον έλεγχο ηλεκτρονικών κυκλωμάτων FE σε ανιχνευτές πυριτίου. Ιωάννινα 2002.
- η) Σ. Κολοβός: Ηλεκτρονική μονάδα παραγωγής πραγματικά τυχαίων αριθμών. Ιωάννινα 2006.
- θ) Ε. Τζοβάρας: Ανάπτυξη ασυρμάτου συστήματος αυτοματισμού ερευνητικού εργαστηρίου, Ιωάννινα 2007.
- ι) Ν. Βραζιτούλης: Διδασκαλία της φυσικής της βασικής δομής της ύλης στην Γ' Γυμνασίου, Ιωάννινα 2008.
- ια) Θ. Πέτρογλου: Ανάπτυξη ασύρματου ηλιακού συστήματος αναμετάδοσης ψηφιακής πληροφορίας, Ιωάννινα 2009.
- ιβ) Α. Παρλάντζας: Ανάπτυξη διακομιστή διαδικτύου σε μικροελεγκτή για ασύρματο σύστημα μετάδοσης ψηφιακής πληροφορίας, Ιωάννινα 2009.
- ιγ) Ν. Λούκας: Ανάπτυξη διεπαφών αισθητήρων - μικροελεγκτή για ασύρματο σύστημα μετάδοσης ψηφιακής πληροφορίας, Ιωάννινα 2010.
- ιδ) Χ. Αυδίκου: Ανάπτυξη συστήματος μέτρησης της ποιότητας νερού με απομακρυσμένη διαχείριση μέσω παγκοσμίου ιστού, Ιωάννινα 2013.
- ιε) Α. Μπόχλος: Ανάπτυξη ενεργειακά αυτόνομου ασύρματου συστήματος αναμετάδοσης ψηφιακής πληροφορίας, Ιωάννινα 2013,
- ιστ) Λ. Τσουλάνας: Ανάπτυξη ασύρματου συστήματος μέτρησης της στιγμιαίας παροχής νερού ποταμού. Ιωάννινα 2016.
- ιζ) Ζ. Αναγνώστου: Ανάπτυξη ηλεκτρονικού συστήματος εισόδου/εξόδου αυτοκινήτων σε ελεγχόμενες εγκαταστάσεις. (Στη φάση εκπόνησης).
- ιη) Α. Κολοβός: Ανάπτυξη ασύρματου ενεργειακά αυτόνομου συστήματος έγκαιρης προειδοποίησης με FPGA και IoT. (Στη φάση εκπόνησης).
- ιθ) Χ. Συμεωνίδης: Ανάπτυξη συστήματος ανίχνευσης διασπάσεων κοσμικών μιονίων βασισμένο σε πλαστικό σπινθηριστή και FPGA. (Στη φάση εκπόνησης).

Επίσης συμμετοχή σε τριμελής εξεταστικές επιτροπές σε αρκετές Μεταπτυχιακές Διπλωματικές Εργασίες.

ΕΡΕΥΝΗΤΙΚΕΣ ΔΡΑΣΤΗΡΙΟΤΗΤΕΣ

Στα πλαίσια της συνεργασίας **UA5, 1980-1990**, που αφορούσε την μελέτη αλληλεπιδράσεων πρωτονίων-αντιπρωτονίων ενέργειας 200, 546 και 900 GeV στο κέντρο μάζας, στον επιταχυντή συγκρουομένων δεσμών $\bar{p}p$ του CERN. Συγκεκριμένα ασχολήθηκα με το σύστημα trigger του πειράματος, που χρησιμοποιούσε σήματα από μπλόκς οδοσκοπίων με πλαστικούς σπινθηριστές και με την επιτήρηση των συστημάτων του κατά την λειτουργία του πειράματος. Επίσης στα πλαίσια του συγκεκριμένου πειράματος ασχολήθηκα με την οπτική ανεύρεση (optical manual scan) και ψηφιοποίηση των ιχνών των φορτισμένων σωματίων σε γεγονότα που περιλάμβαναν τοπολογίες διάσπασης παράξενων σωματίων K, Λ και Ξ. Ο ανιχνευτής του UA5 ήταν οπτικός: 2 μεγάλοι ορθογώνιοι παραλληλεπίπεδοι θάλαμοι καταιονισμών που κάλυπταν γωνία 4π. Στην παρουσία γεγονότων αλληλεπίδρασης $\bar{p}p$ εφαρμοζόταν παλμός της τάξης των 400 KVolts στο πλέγμα των θαλάμων παράγοντας καταιονισμό. Οι θάλαμοι τότε φωτογραφίζονταν στερεοσκοπικά για ανακατασκευή τροχιών στο χώρο. Παρά την απουσία μαγνητικού πεδίου, λόγω των τοπολογιών διάσπασης (Vee, Kink) των εν λόγω παράξενων σωματίων είναι δυνατή η πλήρης ανάλυση της παραγωγής παράξενων σωματίων στις εν λόγω αλληλεπιδράσεις (εργασίες 9,10).

Χρησιμοποιώντας δεδομένα από το UA5 εκπόνθηθηκε και η Διδακτορική μου Διατριβή με θέμα « Παραγωγή Παράξενων σωματίων σε αλληλεπιδράσεις Πρωτονίων Αντιπρωτονίων ενέργειας 200-900 GeV στο κέντρο μάζας της αλληλεπίδρασης», Ιωάννινα 1990.

Στα πλαίσια της συνεργασίας **CLEAR**, 1990-1998, που αφορούσε την μελέτη των παραμέτρων της παραβίασης της συμμετρίας CP και T στο σύστημα των ουδετέρων Καονίων ασχολήθηκα με την ανάπτυξη και συνεχή αναβάθμιση του συστήματος ελέγχου (slow control) του πειράματος (υπεύθυνος από το 1991-1994), συμμετείχα στην επιτήρηση των συστημάτων λήψης δεδομένων του πειράματος, ασχολήθηκα με την συντήρηση και αποτίμηση του λογισμικού ανάλυσης των δεδομένων του πειράματος (1993-1995). Ανέπτυξα μεθόδους ανάλυσης με κινηματικές προσαρμογές όλων των τοπολογιών διάσπασης των ουδετέρων Καονίων, των οποίων το λογισμικό χρησιμοποιήθηκε για την ανάλυση της διάσπασης και την μέτρηση των παραμέτρων της παραβίασης της συμμετρίας CP και T στο σύστημα των ουδετέρων Καονίων. Εκτός από τις αντίστοιχες εργασίες που παρατίθενται στο τέλος του βιογραφικού συμμετείχα σε 6 εσωτερικές τεχνικές δημοσιεύσεις (2-7 σελ. 8) του πειράματος.

Στα πλαίσια της συνεργασίας **DIRAC**, 2001-2002, συμμετείχα κατά την ανάπτυξη του συστήματος λήψης δεδομένων του πειράματος και στη λήψη δεδομένων.

Στα πλαίσια της συνεργασίας **CMS**, 1995-σήμερα, συμμετείχα: στην ομάδα του ανιχνευτικού συστήματος preshower με το οποίο ταυτοποιείται το υπόβαθρο των γ που προέρχονται από την διάσπαση του πλήθους των ουδετέρων πιονίων στο δείγμα των γ που προέρχονται από την διάσπαση του σωματιδίου Higgs σε δύο γ .

Στην εν λόγω ομάδα συμμετείχα με κύριο ρόλο στην ανάπτυξη:

1. ηλεκτρονικού συστήματος ελέγχου των αισθητήρων πυριτίου του preshower με την χρήση διόδου laser στο υπέρυθρο. Το σύστημα περιελάμβανε την παραγωγή σημάτων ελέγχου και την ανάγνωση των σημάτων των αισθητήρων.
2. ηλεκτρονικού συστήματος αφαίρεσης του θορύβου και του υποβάθρου του σήματος βασισμένο σε FPGAs.
3. ηλεκτρονικών συστημάτων για τον μαζικό χαρακτηρισμό (C-V, I-V, noise) των αισθητήρων πυριτίου του preshower.

Επίσης,

4. οργάνωσα και υλοποίησα την αγορά 587 (εκ των περίπου 4500) αισθητήρων του preshower, συμμετοχή του Εργαστηρίου ΦΥΕ του Πανεπιστημίου Ιωαννίνων στο CMS.

Συμμετείχα σε όλα τα στάδια ανάπτυξης του ανιχνευτή preshower:

5. στην ανάπτυξη των ηλεκτρονικών που χρησιμοποιούνται κοντά στα κανάλια πληροφορίας από τον ανιχνευτή Preshower (Front End, FE), καθώς επίσης στον σχεδιασμό του καλωδίου Krypton μεταξύ των ηλεκτρονικών FE και των ηλεκτρονικών συστημάτων επί του χώρου του ανιχνευτή που τα ακολουθούν στην αλυσίδα ανάγνωσης της πληροφορίας.
6. στην ανάπτυξη των ηλεκτρονικών εκτός του ανιχνευτή, κυρίως στην ανάπτυξη αλγορίθμων ψηφιακών φίλτρων για την αφαίρεση του υποβάθρου και του κοινού θορύβου των σημάτων.
7. στην ανάπτυξη του λογισμικού ελέγχου του Preshower και του λογισμικού ανάγνωσης της πληροφορίας του.
8. στην προσομοίωση και βαθμονόμηση του ανιχνευτή Preshower.
9. στην λήψη δεδομένων του πειράματος CMS και στους ελέγχους σε δέσμη πρωτονίων μερών του ανιχνευτή preshower.
10. στην ανάλυση δεδομένων του Preshower και του CMS και στην αρχική οργάνωση του υπολογιστικού συστήματος grid του Εργαστηρίου ΦΥΕ.

Επίσης οργάνωσα ή/και έλαβα μέρος στον μαζικό έλεγχο :

11. όλων των ολοκληρωμένων (chips) FE του preshower (περίπου 7000),
12. του $\frac{1}{4}$ (περίπου 2000) των ηλεκτρονικών καρτών (hybrid) που περιέχουν τα FE chips,
13. περίπου 1000 ηλεκτρονικών καρτών (micromodules) που περιέχουν έναν αισθητήρα του preshower και ένα hybrid, και
14. των καλωδίων Krypton για το δίκτυο token ring του preshower.

Επίσης συμμετείχα στην συναρμολόγηση και έλεγχο:

15. των μητρικών καρτών (~ 8 micromodules + κάρτα που περιέχει το ψηφιακό ολοκληρωμένο συγκέντρωσης των δεδομένων από 8 αισθητήρες και το υλικό

μετάδοσης της πληροφορίας από τον preshower στο σύστημα DAQ του CMS) του preshower

- των ημι-δίσκων (Ds) του preshower: τοποθέτηση μητρικών καρτών, καλωδιώσεων και διεπαφών, συστήματος ψύξης και όλων των βοηθητικών συστημάτων του.
- Στην τοποθέτηση του ανιχνευτή preshower στο πείραμα CMS.

Μέρος των ανωτέρω έγιναν στα πλαίσια των 4, 6, 9,10 και 12 προγραμμάτων της ΓΓΕΤ (που αναφέρονται στην συνέχεια της σελίδας).

Στα πλαίσια της συνεργασίας CMS συμμετέχω επίσης στην ομάδα αναβάθμισης του σκανδαλισμού μιονίων 1^{ου} επιπέδου με χρήση των ανιχνευτών μιονίων του κεντρικού συστήματος μιονίων του πειράματος σε συνδυασμό με την επίβλεψη της διδακτορικής διατριβής η (σελ. 2). Κατά την αναβάθμιση εκτός των πληροφοριών από το ανιχνευτικό σύστημα των θαλάμων ολίσθησης (drift tubes, DTs) που χρησιμοποιούνταν μέχρι πρόσφατα στο σύστημα του σκανδαλισμού 1^{ου} επιπέδου, χρησιμοποιήθηκαν και πληροφορίες από το ανιχνευτικό σύστημα των θαλάμων ιονισμού με ηλεκτροδια-πλάκες υψηλής αντίστασης (Resistive Plate Chambers, RPCs). Χρησιμοποιήθηκαν επίσης νέα σύγχρονα ηλεκτρονικά (μTCA) παρέχοντας μεγαλύτερη ταχύτητα ανάλυσης, μείωση του ρυθμού σκανδαλισμού και δυνατότητα υλοποίησης μελλοντικών πολύπλοκων αλγορίθμων. Το νέο κεντρικό σύστημα ανεύρεσης τροχιών (Bareil Muon Track Finder, BMTF) που αναπτύχθηκε ανταποκρίνεται πλήρως στην συνολική αναβάθμιση του πειράματος CMS λόγω της αύξησης της φωτεινότητας του επιταχυντή συγκρουομένων δεσμών πρωτονίων LHC στο CERN. Πρόσφατα άρχισε η ανάπτυξη νέων ηλεκτρονικών καρτών βασισμένων σε FPGAs της σειράς Ultrascale της Xilinx για μεγαλύτερες ταχύτητες διαμετακόμισης δεδομένων και μεγαλύτερες ταχύτητες σκανδαλισμού.

Συμμετοχή στα προγράμματα - τεχνολογικά πρότζεκτ που σχετίζονται με εφαρμογές ηλεκτρονικών σε άλλους τομείς όπως βιοϊατρική, περιβάλλον, κυρίως λόγω της εμπειρίας που αποκτήθηκε στα πειράματα της Φυσικής Υψηλών Ενεργειών

της ΕΕ:

- FP2-TELEMAN II, FI2T-CT90-0015, Laser scanning for circulation in hazardous environment or for space sensing from a 2D TV perception with adjustable window for the 3D scanned network (1990-93, EDF/FR, Bertin et Cie/FR, Etnoteam/IT, Uol/GR, INITEC/ES).
- BIOMED II, Biomedical Radiography and Radioscopy Using Silicon Microstrip Sensor (brsms), BMH4-CT96-1119 (1996, Uol/GR, Etnoteam/IT, ACTA/NL, UCL/UK, IC/UK) ως ερευνητής.
- LSF (TMR), Ταξίδια στο NMRC για μετρήσεις C-V, I-V σε δομές πυριτίου, 1997 και 1998 ως ερευνητής.
- FP6-NMP, Intelligent Imaging Sensors for Industry, Health & Security. , I-ImaS, NMP2-CT-2003-505593 (2004-2006, UCL/UK, IC/UK, RAL/UK, Uol/GR, ACTA/NL, ANKO/GR, CTI/GR, SINTEF/NR, UoT/IT) ως κύριος ερευνητής.
- IPA CBP GR-AL 2007-2013, Wireless Water Quality Monitoring of Arachthos and Vjose Rivers (wwwqm_avr), (2012, Uol/GR, UoV/AL), Επιστ. Υπεύθυνος.

και της ΓΓΕΤ:

- Πειράματα συνεργασίας CERN-ΠΙ, 1984-88.
- Ανάπτυξη Ηλεκτρονικών Συστημάτων Ελέγχου Πειραμάτων ΦΥΕ, 1990-91,
- Ανάπτυξη συστημάτων CAD-CAM, PLC-CIM, 1992-94.
- Ετήσια προγράμματα ταξιδιών και παραμονής στο CERN, ΓΓΕΤ
- Κοινοπραξία για το πείραμα CPLEAR του CERN, 1991-1994.
- Προσομοιώσεις μικροραυδωτών ανιχνευτών πυριτίου και σχεδίαση ηλεκτρονικών για το πείραμα CMS,CERN, ΕΕΠΙ, 1996-97.
- ΕΡΕΤ II –ΕΚΒΑΝ-ΠΙ (#Π-79), Ανάπτυξη συστήματος τηλε-διαχείρισης υδάτινων πόρων (ΑΣΤΗΛΔΥΠ), 1996-2000.

8. ΕΠΕΤ II (476, ΒΜΠ), Ανάπτυξη βιομηχανικών προϊόντων μικροηλεκτρονικής, ΓΓΕΤ, 1996-1999.
9. ΕΠΕΤ II-98ΜΙΚ-25, Σύστημα ανάγνωσης ανιχνευτών πυριτίου, 1999-2001, Επιστ. Υπεύθυνος
10. ΕΠΕΤ II-98ΜΙΚ-10, Σχεδιασμός, ανάπτυξη και έλεγχος ανιχνευτών πυριτίου, 1999-2001, Επιστ. Υπεύθυνος ομάδας
11. ΕΠΕΤ II, 98 ΜΙΚ - 2: Ανάπτυξη Συστήματος λήψης επεξεργασίας και επιλογής δεδομένων ανιχνευτικών διατάξεων Σωματιδιακής Φυσικής Υψηλών Ενεργειών, 1999-2001.
12. ΕΠΕΑΕΚ II-Ηράκλειτος, Ανάπτυξη γεννήτριας σημάτων σκανδαλισμού και κυκλωμάτων αφαίρεσης θορύβου ψηφιοποιημένου σήματος σε πειράματα ΦΥΕ, 2002-2007, Επιστ. Υπεύθυνος.

Συγκεκριμένα:

- στο πρότζεκτ **brsms** (Biomedical Radiography and Radioscopy Using Silicon Microstrip Sensors) αναπτύχθηκε ένα σύστημα ακτινογραφικής απεικόνισης βασισμένο σε μικρολωριδιακούς αισθητήρες πυριτίου με ηλεκτρονικά FE(APV25) τεχνολογίας δανεισμένης από τα πειράματα φυσικής Υψηλών Ενεργειών (Το APV25 αναπτύχθηκε στα αντίστοιχα εργαστήρια του Rutherford (RAL) και Imperial college). Στα πλαίσια του project αναπτύχθηκε εκτός των άλλων, σε συνεργασία με το Τμήμα Ηλεκτρολόγων Μηχανικών και μηχανικών υπολογιστών του Πανεπιστημίου Πάτρας ένα ολοκληρωμένο FE χαμηλού θορύβου για μικρολωριδιακούς ανιχνευτές πυριτίου (εκτός της συμμετοχής στην ανάπτυξη, οργανώθηκαν και εκτελέστηκαν υπό την ευθύνη μου 2 δοκιμαστικές αποστολές κατασκευής του συγκεκριμένου ολοκληρωμένου σε αντίστοιχο εργοστάσιο κατασκευής). Στα πλαίσια του πρότζεκτ αναπτύχθηκε υπό την ευθύνη μου το σύστημα σκανδαλισμού-ανάγνωσης του συστήματος καθώς και το τελικό ολοκληρωμένο σύστημα.
- στο πρότζεκτ **I-I mas** (Intelligent Imaging Sensors) σχεδιάστηκε και αναπτύχθηκαν έξυπνα αισθητήρια για να χρησιμοποιηθούν σε προσαρμόσιμα ιατρικά ακτινογραφικά συστήματα απεικόνισης για μαμμογραφία, και οδοντιατρική ραδιογραφία. Το σύστημα χρησιμοποιεί σάρωση με αισθητήρα ενεργών εικονοστοιχείων σε διάταξη γραμμής με δυνατότητα δυναμικής προσαρμογής σε πραγματικό χρόνο κατά την καταγραφή της απεικόνισης. Η προσαρμογή αναφέρεται στην κατά περιοχές μείωση της δόσης της ακτινοβολίας, ιδιαίτερα σημαντική παράμετρος κατά τις ακτινογραφίες.
- στο πρότζεκτ **wwqm_avr** (Wireless Water Quality Monitoring of Arachthos and Vjose Rivers) σχεδιάστηκε και αναπτύχθηκε ένα σύστημα συχνών περιοδικών μετρήσεων των παραμέτρων ποιότητας του νερού ποταμών και τακτικής αποστολής των σε έναν τερματικό διακομιστή web για πληροφόρηση, καταχώρηση και ανάλυση. Το σύστημα αποτελείται από
 - αυτόνομους ενεργειακά σταθμούς μέτρησης που περιλαμβάνουν αυτόνομο σύστημα δειγματοληψίας νερού με αντλία που βασίζεται στον κοχλία του Αρχιμήδη, αισθητήρες μέτρησης 8 παραμέτρων ποιότητας του νερού, σύστημα αυτοματισμού, τοπικό διακομιστή web με σύστημα αποθήκευσης της πληροφορίας τοπικά και σύστημα ασύρματης μετάδοσής της.
 - αυτόνομους ενεργειακά αναμεταδότες που αναμεταδίδουν την πληροφορία με κοινό πρωτόκολλο wifi στον τερματικό διακομιστή web.

Οι σταθμοί και οι αναμεταδότες τροφοδοτούνται από σύστημα αποθήκευσης ηλεκτρικής ενέργειας βασισμένο σε ηλιακά φωτοβολταϊκά πάνελς που φορτίζουν σύστημα υπερπυκνωτών, ενώ οι παράμετροι του νερού που μετρώνται είναι θερμοκρασία, αγωγιμότητα, PH, DO, ORP, και ιόντα Αμμωνίου, Νιτρικά και Χλωρίου.

ΣΥΜΜΕΤΟΧΗ ΣΕ ΣΥΝΕΔΡΙΑ ΚΑΙ ΣΧΟΛΕΙΑ:

Συμμετείχα ως ομιλητής σε συνέδρια ως εξής:

1. N. Manthos et al, Recent results of the UA5 experiment at CERN, ΕΕΣΦΥΕ 1984.
2. N. Manthos et al, Strange particle production in $\bar{p}p$ collisions at 200-900 GeV cm energies, ΕΕΣΦΥΕ, 1988.
3. N. Manthos et al, Recent CPLEAR results, ECFA meeting, Athens 1996.
4. An IR laser system for testing Si Sensors-FE chip micromodules, EESFYE 1996.
5. N. Manthos et al, An efficient hardware design for rejecting common mode in a group of adjacent channels of silicon microstrip sensors used in high energy physics experiments, IEEE RTC, Stockholm, 2005
6. N. Manthos et al, Production testing and quality assurance of the CMS preshower front-end chips - PACE3, LECC-2005, Heidelberg, 2005.
7. N. Manthos, CMS in Greece, TWEPP-08, Naxos, 2008
8. N. Manthos et al, A simple wireless system for remote water quality monitoring in rural area rivers, LuWQ2015, Vienna, 2015.

Τέλος συμμετέχω σε πάνω από 1000 δημοσιεύσεις σε Πρακτικά Συνεδρίων και διεθνή επιστημονικά περιοδικά, παρουσιάσεων εργασιών σε διεθνή συνέδρια στα πλαίσια των πειραμάτων UA5, CPLEAR, CMS, της συνεργασίας BRSMS και I-Imas.

Συμμετείχα στην τοπική οργανωτική επιτροπή των Διεθνών Συνεδρίων της Ελληνικής Εταιρείας Σπουδών Φυσικής Υψηλών Ενεργειών το 1996, 2000 και 2006 και στην οργανωτική επιτροπή του TWEPP-08 στη Νάξο το 2008, στο 1^ο Ελληνικό Σχολείο Υψηλών Ενεργειών το 1982 στην Κέρκυρα και στο σχολείο Φυσικής του CERN το 1988 στην Λευκάδα.

Το 1995, συμμετείχα σε σεμινάρια (ακροατής, πλέον του 1 μηνός) Μικροηλεκτρονικής/σχεδιασμού VLSI του Εργαστηρίου Σχεδιασμού Ολοκληρωμένων Κυκλωμάτων του Πανεπιστημίου Πατρών στα πλαίσια του Ευρωπαϊκού προγράμματος MEDCHIP - Αναβάθμιση εκπαίδευσης στη Μικροηλεκτρονική στις χώρες της Μεσογείου.

Συμμετοχή σε περισσότερες από 700 επιστημονικές δημοσιεύσεις σε διεθνή επιστημονικά περιοδικά με κριτές (Κατάλογος στο τέλος του βιογραφικού) με περισσότερες από 15000 αναφορές (h-index ~55) (Scopus, 27/12/2017).

Συμμετοχή σε κρίσεις επιστημονικών άρθρων σε διεθνή περιοδικά με κριτές, καθώς επίσης και στην κρίση επιστημονικών και ερευνητικών προτάσεων σε προκηρύξεις προγραμμάτων από την Ελληνική πολιτεία.

Εκπρόσωπος της ομάδας Φυσικής Υψηλών Ενεργειών του Τμήματος Φυσικής του Πανεπιστημίου Ιωαννίνων στην διοίκηση του πειράματος CMS στο CERN (2007-2010) και από το 2010-εως σήμερα αναπληρωτής εκπρόσωπος.

Από το 2005 έως σήμερα Διευθυντής της Συντονιστικής Επιτροπής του ΠΜΣ-Σύγχρονες Ηλεκτρονικές Τεχνολογίες του Τμήματος Φυσικής του Πανεπιστημίου Ιωαννίνων
Από το 2007 έως 2009 μέλος του Διοικητικού Συμβουλίου της Ελληνικής Εταιρείας Σπουδών Φυσικής Υψηλών Ενεργειών.

ΑΝΑΦΟΡΕΣ ΣΤΙΣ ΔΗΜΟΣΙΕΥΣΕΙΣ ΑΠΟ ΤΟ SCOPUS 27/12/2017: 17432 (h-index:55)

ΑΛΛΕΣ ΔΡΑΣΤΗΡΙΟΤΗΤΕΣ (ΔΙΟΙΚΗΤΙΚΕΣ)

Συμμετοχή στην διοίκηση του Τμήματος Φυσικής του Πανεπιστημίου Ιωαννίνων ως:

- Διευθυντής του Τομέα Ατομικής, Μοριακής Φυσικής, Πυρηνικής Φυσικής και Φυσικής Υψηλών Ενεργειών, 2005-2007
- μέλος των:
Επιτροπή Προγράμματος Σπουδών
Επιτροπή κτηρίων και ασφαλείας.
Επιτροπή κατατάξεων
Επιτροπή Πληροφορικής
Επιτροπή παραλαβής οργάνων
Επιτροπή παρακολούθησης προόδου πρωτοετών φοιτητών
- Επίσης μέλος της Ομάδας Εσωτερικής Αξιολόγησης (ΟΜΕΑ) του Τμήματος
- Εκπρόσωπος της Σχολής θετικών Επιστημών στην Επιτροπή Ερευνών του Πανεπιστημίου Ιωαννίνων, 2017.
- Εκπρόσωπος του Πανεπιστημίου Ιωαννίνων στον οργανισμό EUROPRACTICE για λογισμικό σχεδιασμού μικροηλεκτρονικών και αποστολής των σχεδίων για κατασκευή ολοκληρωμένων κυκλωμάτων σε συμβαλλόμενα εργοστάσια.
- Μέλος της Συγκλήτου του Πανεπιστημίου Ιωαννίνων, 2010-2011.
- Μέλος της Προσωρινής Γενικής Συνέλευσης του Τμήματος Πληροφορικής, 1996-1997.
- Αριθμό επιτροπών προμήθειας ηλεκτρονικού-υπολογιστικού-επιστημονικού εξοπλισμού του Πανεπιστημίου Ιωαννίνων.
- Αριθμό επιτροπών επιλογής προσωπικού και υπηρεσιών του Πανεπιστημίου Ιωαννίνων.

ΔΙΑΦΟΡΕΣ ΣΥΜΜΕΤΟΧΕΣ ΚΑΙ ΕΝΔΙΑΦΕΡΟΝΤΑ

Μέλος του Διοικητικού Συμβουλίου (ΔΣ) του Συλλόγου ΔΕΠ του Πανεπιστημίου Ιωαννίνων (Ταμίας), του Διοικητικού Συμβουλίου (ΔΣ) της Μεταλλουργικής Ηπείρου Α.Ε., του ΔΣ της Ιστορικής Λαογραφικής Εταιρείας Τζουμέρκων (Γεν. Γραμματέας) και Πρόεδρος του Συλλόγου Προστασίας Αράχθου.

Ενασχόληση με περιβαλλοντικά θέματα και με την διατήρηση της βιοποικιλότητας.

ΔΗΜΟΣΙΕΥΣΕΙΣ.

ΕΣΩΤΕΡΙΚΕΣ ΔΗΜΟΣΙΕΥΣΕΙΣ.

Συμμετείχα στην συγγραφή εσωτερικών – τεχνικών δημοσιεύσεων (στις περισσότερες ως υπεύθυνος συγγραφέας) ως εξής:

1. R.E. Ansorge et al, Hyperon production at 200 and 900 GeV c.m. energy, UA5 collaboration, USIP 89-02, 1989.

2. N. Manthos et al, Kinematical fits, EP/PS195(CPLEAR)/91-006, CP/PHY-019, 1991.
3. N. Manthos et al, Kinematical fits (trigger 233), CP/SW/036.
4. N. Manthos et al, Generalized kinematical fits, CP/SW/037.
5. N. Manthos et al, Event classification and analysis using cuts and kinematical constraint fits, PPE/PS195/CT/91-008, CP/PHY-021
6. N. Manthos et al, The slow control System of the CPLEAR experiment, User manual, 1991.
7. N. Manthos, Changes concerning the CPLEAR Pattern Recognition program, PPE/PS195/NM/93-016, CP/SW-049.
8. P. Aspell et al, Results from the 1999 Neam Test of a Preshower Prototype, CMS NOTE 2000-001.
9. E. Zervakis et al, Prototype implementation of a submicron transimpedance CMOS front-end amplifier for silicon detector readout in calorimetry applications, CMS IN 2001-055.
10. I. Evangelou et al, Noise measurement on Preshower Si sensors, CMS IN 2002-026
11. N. Manthos et al, A First Attempt At An Algorithm For on-line Pedestal and Common Mode Subtraction of Data from the CMS Preshower DeltaStream Chip, and its Implementation In An FPGA, CMS IN-2002/047
12. Ph. Bloch et al, Performance of Si sensors irradiated to 5×10^{14} n/cm², CMS NOTE 2003-012.
13. N. Manthos et al, Evaluation of Polyimide Cable Shielding Schemes for the CMS Preshower Front-End Hybrid, CMS IN 2004/031.
14. I. Evangelou et al., A Readout System for Dynamic Measurements of CMS Preshower Silicon Sensors, CERN-CMS-IN-2004/032.
15. P. Adzic et al, Results of the first performance tests of the CMS electromagnetic calorimeter, CMS NOTE 2005-020
16. D. Barney et al, Detection of muons at 150 GeV/c with a CMS Preshower Prototype, CMS NOTE 2006/046.
17. N. Manthos et al, Study of Algorithms for on-line CMS Preshower data reduction and their possible implementation in FPGAs on-board the CMS ECAL DCC, CMS IN 2006/048.
18. D. Barney et al, Implementation of on-line data reduction algorithms in the CMS Endcap Preshower Data Concentrator Card. CMS NOTE 2006/146.
19. P. Kokkas et al, On the feasibility of measuring the ratio of three over two jet cross sections at $\sqrt{s}=7\sim\text{TeV}$ and $\sqrt{s}=10\sim\text{TeV}$ with CMS at the LHC., CMS AN-2010/089.
20. J. Ero et al, The CMS Level-1 Trigger Barrel Track Finder, CR-2015/304.
21. C. Battilana et al, Upgrade of the CMS muon trigger system in the barrel region, CR-2016/260.

ΔΗΜΟΣΙΕΣΕΙΣ ΣΕ ΕΠΙΣΤΗΜΟΝΙΚΑ ΠΕΡΙΟΔΙΚΑ ΜΕ ΚΡΙΤΕΣ:

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2. G.J.Alnet et al-UA5 collaboration, Antiproton-Proton Cross sections at 200 and 900 GeV c.m. Energy. **Zeit. Phys. C32 (1986) 153-161.**
3. G.J.Alnet et al-UA5 collaboration, Scaling of Pseudorapidity Distributions at c.m. Energies up to 0.9 TeV. **Zeit.Phys. C33 (1986) 1-6.**
4. R.E.Ansorge et al-UA5 collaboration, Diffraction Dissociation at the Pulsed Collider at c.m. Energies of 900 and 200 GeV. **Zeit. Phys. C33 (1986) 175-185.**
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8. R.E.Ansorge et al-UA5 collaboration, Charged particle correlations in $\bar{p}p$ Collisions at c.m. Energies of 200, 546 and 900 GeV. **Zeit. Phys. C37 (1988) 191-213.**
9. R.E.Ansorge et al-UA5 collaboration, Kaon production in $\bar{p}p$ interactions at c.m. Energies from 200 to 900 GeV. **Zeit. Phys. C41 (1988) 179-190.**
10. R.E.Ansorge et al-UA5 collaboration, Hyperon production at 200 and 900 GeV c.m. Energy. **Nucl.Phys. B328 (1989) 36-58.**
11. R.E.Ansorge et al-UA5 collaboration, Photon production at c.m. energies of 200 and 900 GeV. **Zeit. Phys. C43 (1989) 75-89.**
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15. R.Adler et al-CPLEAR collaboration, Bose-Einstein correlations in $\bar{p}p$ annihilations at rest. **Zeit. Phys. C63 (1994) 541-547.**
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Περισσότερες από 50 έχουν αποσταλεί πρόσφατα για δημοσίευση.