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## Centro de Instrumentação (Instrumentation Centre)

<http://c-instr.fis.uc.pt/>

### Unit 217/94

Physics Department – University of Coimbra

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## Synopsis

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- radiation and particle physics, biomedical physics, digital processing techniques and embedded system platforms;
- R&D and innovation in the generic field of instrumentation,

encompassing systems, apparatus, methods and basic science

## Strategic Guidelines

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- Producing original scientific material & promoting innovation through technology transfer
- Sustaining long-term collaborations (National/International; Scientific/Industrial/Services)
- Training of Post-grad and U-grad students and continuing education of technical staff
- Promoting of spin-off firms and employability involving graduates and technical staff

## Organization

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### Three research groups:

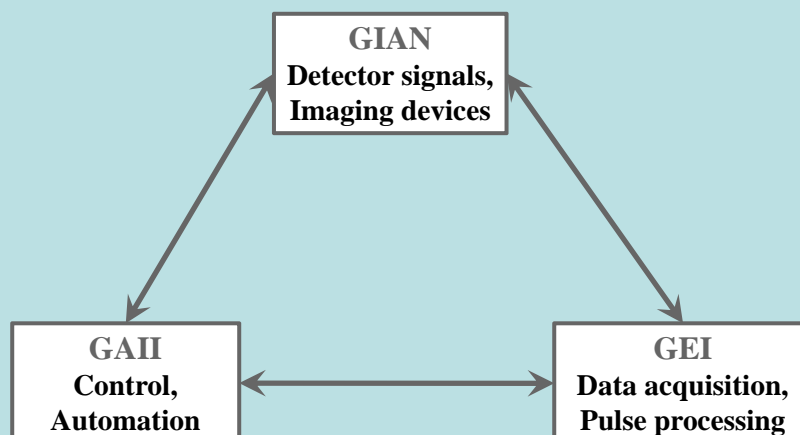
(merge of former Units 217/94 and 732/02)

- GIAN – Atomic & Nuclear Instr. Group  
Radiation detection physics & instr.
- GEI – Electronic Instr. Group  
Data acquisition & signal processing  
Biomed instr.
- GAI – Automation & Industrial Instr. Group  
Control and automation instr.  
Industrial Wireless Sensor Networks

## Merging Objectives

- Enlarge know-how and competences
- Increase manpower beyond critical mass
- Increase efficiency
- *Comply with recommendations of 2003 Physics Evaluation Panel.*

## Synergies



## CI-Members

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- 1 Full Professor
- 2 Associate Professors
- 1 Principal Researcher
- 10 Assistant Professors
- 1 Coordinator Professor (Politechnic School)
- 2 Assistant Professors (Politechnic School)
- 1 Professor Emeritus
- 1 Invited Full Professor (PSI; 07-08)
- 3 Post-Docs
- 18 PhD students

\* In the last 4-year period (03-06): ~16 PhD members (on average)

## CI-Members Affiliations

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- FCTUC – 14
- UBI – 2
- IPC – 1
- IPL – 1
- IPV – 1

\* Post-Docs – FCTUC (FCT grants)

\*\* PhD Students: 1- UA; 1- UBI; 1- IPC; 2- CFN;  
2- collaboration with Civil Eng. Dept., FCTUC;  
11 – FCTUC (FCT grants)

## CI-Members Outreach Activities (03-06)

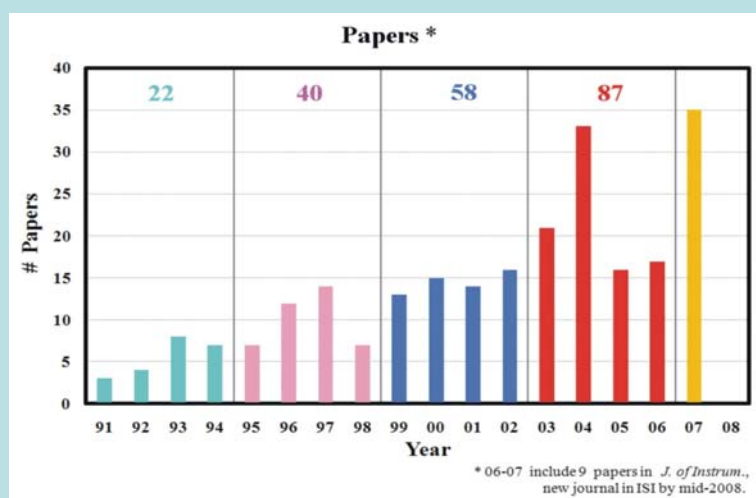
- **CMBA Correia:** - Member of the Phys. Dept. Executive Committee;  
- Member of the Graduate Studies Committee;  
- President of ADDF;
- **LFR Ferreira (03-05):** - MCTES, "General Director for Higher Education";  
- MCTES, Liaison for PRODEP III-POCTI;  
- Cabinet Chief of SEA MAI
- **JMF dos Santos:** - Member of the Phys. Dept. Executive Committee;  
- Member of the Graduate Studies Committee;  
- Coordinator of the Master in "Instrum. & Microelectr."  
- Member of the Executive committee of ADDF;  
- President of the Regional Section of the Port. Phys. Soc.
- **FJA Cardoso:** - Director of the Automation & Instrumentation Unit of IPN  
- CTO & R&D Director of ENEIDA-Instrumentation, Sensing, Wireless, Lda
- **JB Simões:** - Vice-President of ADDF;  
- Coordinator of the Development Dept. of ISA Lda. (company);  
- Member of the Technical & Scientific Committee of XHMS (Centre for Excellence in HealthCare and Medical Solutions)
- **JAM Lopes (04-06):** - Vice-President of the Phys.-Mat. Dept., ISEC;  
- Vice-President of ISEC Executive Committee;  
- (06) Coordinator of the dossier for ISEC course on Biomed. Eng.
- **J Landeck:** - Member of the **ACIC** Executive Committee (Comm. & Indust. Assoc. - Coimbra)  
- Coordinator of the Applied Embedded Software Dept. of ISA Lda (company)

2007 Evaluation, Jan. 30, 2008

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## Results - Publications

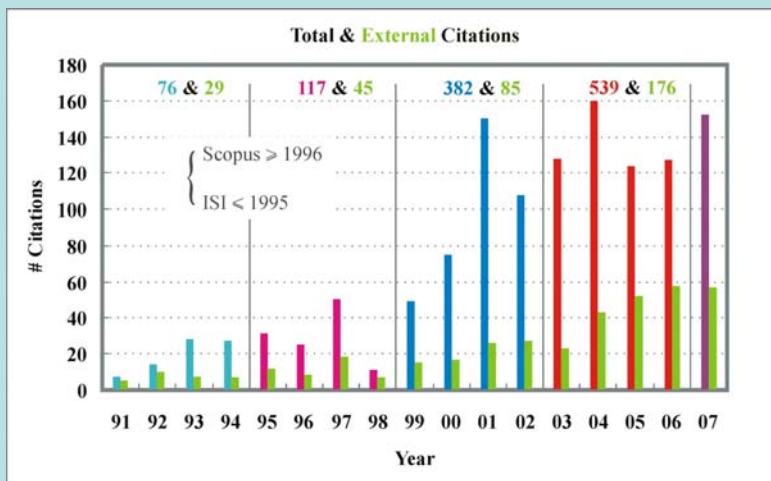


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## Results - Citations

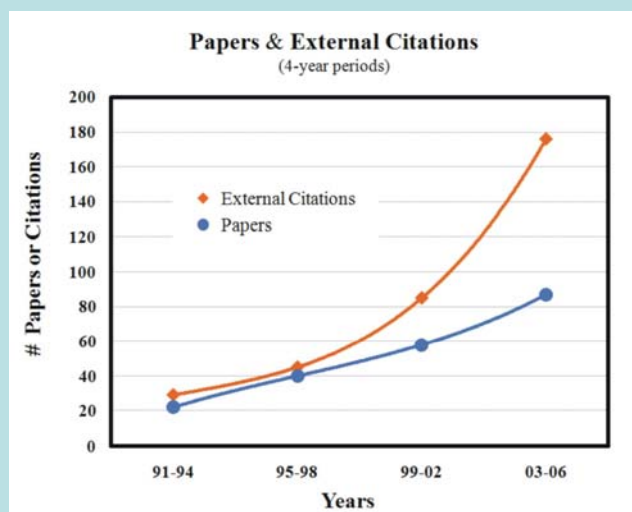


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## Results – Ext.Cit. vs Pub.

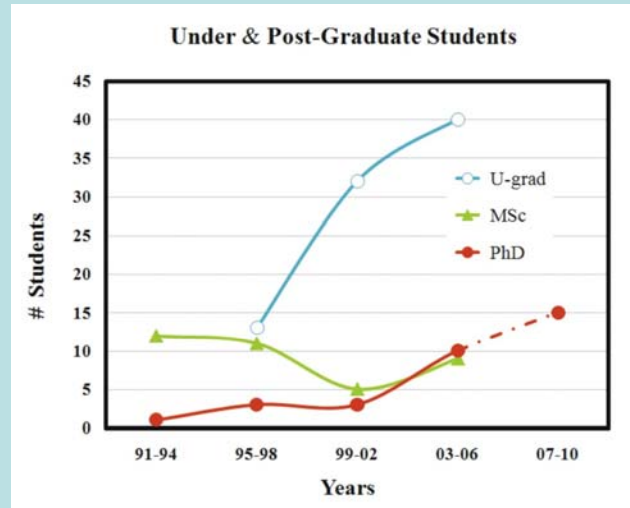


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## Results - Training

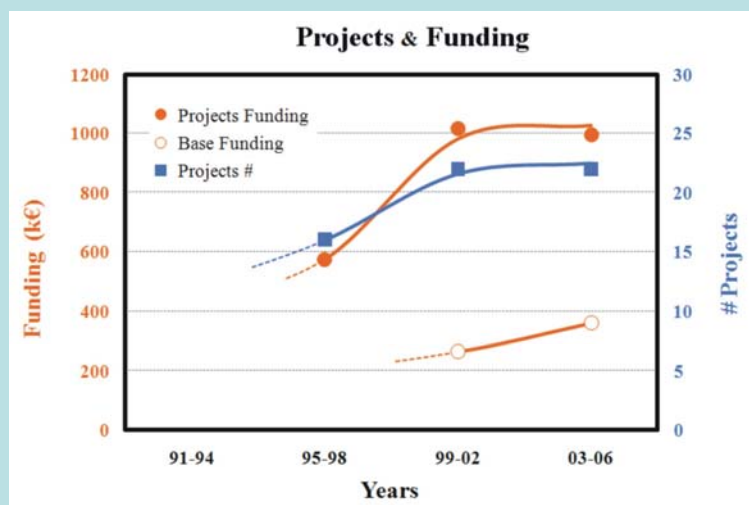


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## Results - Funding



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## Future Goals (07-10)

- Improve scientific output  
(increase #papers/PhD and #Ext.-Citations/paper ratios).
- Have more papers published in high impact journals
- Increase the number of researchers with PhD  
(3 will be obtained via Ciência-2007 Programme – FCT)
- Increase the number of PhD & MSc students and support the new course on Biomed. Eng.
- Produce at least 2 patents
- strengthen the long-standing collaborations already existing  
(either scientific or with health units, industry or service providers)
- Collaborate with similar Centres
- Share PhD students with external partners

## Future Networking Activities

- Integrate the State Associated Laboratory **LAPIF**  
(Associated Laboratory for Plasma Instrumentation and Fusion)  
– collaboration in the ITER programme.
- Participation in the **Física-N** consortium
- RD-51 (CERN): Micro-Pattern Gas Detectors
- Promoter of the recent **LUBRA-X**  
(Luso-Brasilian Network for applications of x-rays to cultural heritage)  
and **IBAM-X** (Ibero-American Network for applications of x-rays)
- Integrate the **ASPERA** and **ELIAS** network  
(European networks for Dark Matter Search experiments)



## Equipment request

- **Compact, portable quantitative x-ray analysis system (~80 kEu)**
  - Expand our competences for the already existing know-how;
  - **Share** with the **Atomic Physics Group** (Univ. Lisbon) ([New Collaboration](#)); LUBRA-X
  - [Establish a facility & know-how in Portugal Centre Region for institutional collaborations](#)
- **Bench milling machine, precision saw & workshop equipment (~40 kEu)**
- **Radioactive sources; Fe-55, Cd-109, Po-210, Ni-68, Co-60, Cs-137, Na-22 (~20 kEu)**
- **Leak detector (~18 kEu)**
- **Electronics CAD Software (10 kEu)**
- **Turbopump based vacuum system (~10 kEu)**
- **Microscope & Spectrometer - Ocean Optics (~8 kEu)**
- **Portable x-ray tube system with HV and Controller AmpTek (~7 kEur)**
- **Programmable liquid dispenser (~6kEu)**
- **Logic Analyzer + Mixed Signal Oscilloscope (5 kEu)**