

What is **MultiDark**?

MultiDark is a 5-years Project (2010–2014) supported by the **CONSOLIDER–Ingenio 2010 Programme** of the **Spanish Ministry of Science and Innovation (MICINN)**

- ▶ Prompted by a call of the MICINN for funding excellence projects (**CONSOLIDER**), many researchers involved in the field of Dark Matter decided to apply for a common research project

In 2009 the **MICINN** selected 13 out of a total of 101 proposals in all branches of science and humanities. **MultiDark** was one of those 13

The aim of MultiDark is **to contribute to the identification and detection of the dark matter**. To this end, we propose:

- ▶ to analyze the most plausible particle candidates for dark matter (*theoreticians*),
- ▶ to investigate how they are distributed in the Universe (*astrophysicists*),
- ▶ to contribute to the development of experiments to detect them (*experimentalists*).

MultiDark is formed by **19** theoretical, experimental and astrophysics **groups** belonging to Spanish universities and research institutes, and includes also **15 members from foreign institutions**. In total the project involves more than **100 researches**, as well as more than **20 hired members**

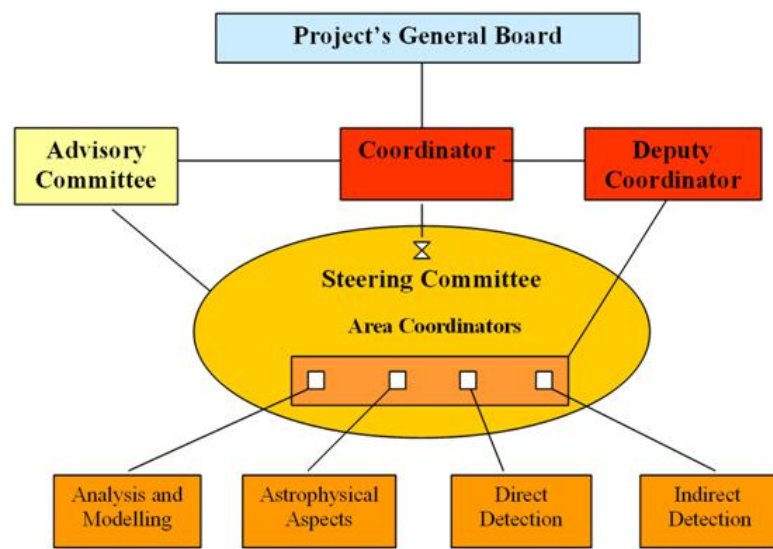
G. Bertone	IAP–France
A. Morselli	INFN/Roma U.
V. Vitale	“
M. Casolino	“
K. Choi	KAIST–Korea
J. Collar	Chicago Univ.
N. Fornengo	Torino Univ./INFN
S. Gottlober	AIP–Germany
S. Nuza	“
A. Partl	“
K. Riebe	“
Y. Mambrini	LPT/Orsay–France
M. Ricci	INFN/Frascati Lab.
M.A. Sánchez–Conde	KIPAC–SLAC
J.D. Vergados	Ioannina Univ.



Organization

► Steering Committee

- Carlos Muñoz (Coordinator)
- Juan J. Hernández-Rey (Deputy Coordinator & Area of Indirect Detection)
- Jose W.F. Valle (Area of Analysis and Modelling)
- Francisco Prada (Area of Astrophysical Aspects)
- María L. Sarsa (Area of Direct Detection)



Office Manager

Susana Hernández

► Project's General Board

- Carlos Muñoz (UAM/IFT)
- Sven Heinemeyer (IFCA)
- Jose W.F. Valle (IFIC-AHEP)
- Mario Gómez (UHU)
- Antonio L. Maroto (UCM-Th)
- M. Ángeles Pérez-García (USAL)
- M. Masip (UGR)
- Francisco Prada (IAA)
- Juan Betancort-Rijo (IAC)
- María L. Sarsa (UZ)
- Abelardo Moralejo (IFAE)
- Juan A. Barrio (UCM-GAE)
- Juan J. Hernández-Rey (IFIC-Exp)
- Miquel Ardid (UPV)
- María D. Rodríguez-Frías (UAH)
- Gonzalo Parente (USC)
- Alicia Sintès (UIB)
- Javier Bussons-Gordo (UM)
- Raúl Ramos (CETA-Ciemat)

Advisory Committee

David O. Caldwell, University of California Santa Barbara

Ben Moore, University of Zürich

Keith Olive, University of Minnesota

Gerard van der Steenhoven, NIKHEF and University of Twente

Joseph Silk, University of Oxford

Organization

► Science Working Groups

- **Direct detection**
Coordinators: David G. Cerdeño, Juan Collar, Eduardo García
- **Indirect detection: gammas**
Coordinators: Juan Abel Barrio, Gianfranco Bertone, Miguel A. Sánchez-Conde
- **Indirect detection: neutrinos, antimatter, cosmic rays and gravitational waves**
Coordinators: Miquel Ardid, Nicolao Fornengo, Germán Ros, Juande D. Zornoza
- **LHC, particle physics and dark matter**
Coordinators: Mario E. Gómez, Sven Heinemeyer, Martin Hirsch
- **Cosmology**
Coordinators: Stefan Gottlober, Antonio L. Maroto

► Outreach Working Group

- Coordinators: David G. Cerdeño, Susana Hernández, Sergio Pastor

Infrastructures

MultiDark groups are involved in many experiments:

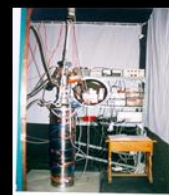
- ANAIS, ROSEBUD, EURECA (UZ)
- CDMS (MultiDark-UAM/IFT)
- COUPP (MultiDark-UPV)
- MAGIC (IFAE, UCM-GAE, IAA)
- CTA (IFAE, UCM-GAE, UMU)
- GAW (IAA, UHU)
- ANTARES, KM3NeT (IFIC-Exp, UPV)
- SDSS-III/BOSS (MultiDark-IAA)
- AUGER (USC, UAH, IFIC-AHEP)
- JEM-EUSO (UAH)
- LISA (UIB)

Foreign Members are also involved in:

- FERMI (A. Morselli, V. Vitale)
- PAMELA (M. Casolino, M. Ricci)
- JEM-EUSO (M. Casolino, M. Ricci)
- COUPP (J. Collar)



ANAIS



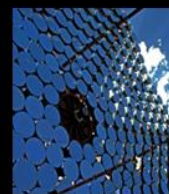
ROSEBUD



EURECA



MAGIC



CTA



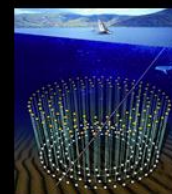
GAW



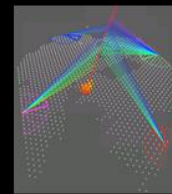
SDSS-III/BOSS



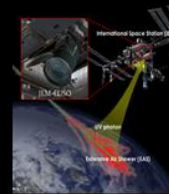
ANTARES



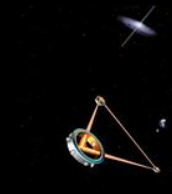
KM3NeT



AUGER



JEM-EUSO



LISA



FERMI



PAMELA



COUPP

Instrumentation

- ▶ MultiDark groups are also involved in the development of instrumentation for different projects:

Group

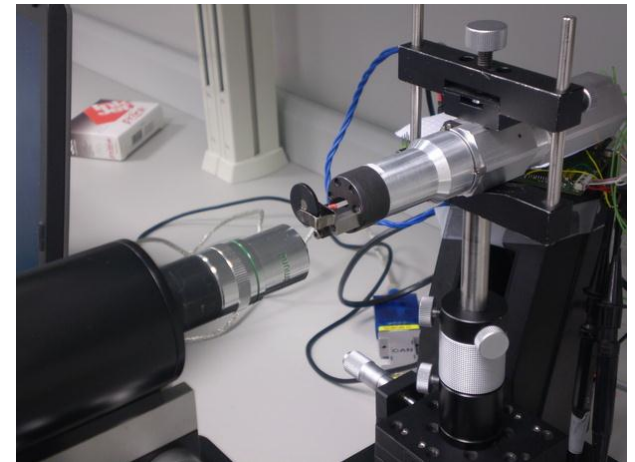
[Super Ifu Deployable Experiment](#)

PI

Francisco Prada

...

...



- ▶ MultiDark collaborates closely with the following companies:

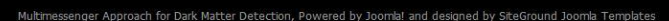
[Added Value Solutions](#)

...

...



<http://projects.ift.uam-csic.es/multidark>



<http://www.facebook.com/multidark>

113 monthly active users

41 visits this week



MultiDark in Twitter (since a few months)

21 followers

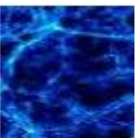
MultiDark follows 62 groups

<http://twitter.com/MultiDark>



The screenshot shows the Twitter profile of MultiDark (@MultiDark). The profile is located in the center-left of the page. It features a blue profile picture with a network-like pattern. The name 'MultiDark' is in bold, followed by the handle '@MultiDark' and 'Spain'. The bio reads: 'Spanish Project supported by the Ministry of Science and Innovation's Consolider-Ingenio 2010 Programme, focused on the enigma of dark matter in the universe.' and includes a link to 'http://projects.ift.uam-csic.es/multidark'. Below the bio is a button that says 'Edit your profile →'. Underneath the bio are tabs for 'Tweets', 'Favoritos', 'Siguiendo', 'Seguidores', and 'Listas'. The 'Tweets' tab is selected, showing two tweets. The first tweet is from MultiDark, dated 19 de oct, about the 5th MultiDark Consolider Workshop. The second tweet is also from MultiDark, dated 19 de oct, about a new website URL. On the right side of the profile, there is a section 'Acerca de @MultiDark' with statistics: 6 Tweets, 62 Siguiendo, 21 Seguidores, and 0 Listas. Below this is a section 'Imágenes Recientes' showing a small image of a galaxy. At the bottom right, there is a section 'Similares a ti · ver todos' with recommendations for 'IaClasse', 'Mastermania', and 'FaciLibro'.

twitter  Buscar  Inicio Perfil Mensajes A quién seguir   MultiDark ▾

 **MultiDark**
@MultiDark Spain
Spanish Project supported by the Ministry of Science and Innovation's Consolider-Ingenio 2010 Programme, focused on the enigma of dark matter in the universe.
<http://projects.ift.uam-csic.es/multidark>

Edit your profile →

Tweets Favoritos Siguiendo Seguidores Listas ▾

 **MultiDark** MultiDark
The 5th MultiDark Consolider Workshop will be organized in Huelva: 3-4th November 2011. More information: ift.uam-csic.es/iftworkshops/i...
19 de oct

 **MultiDark** MultiDark
We have changed the URL of our web site! This is the NEW one: projects.ift.uam-csic.es/multidark

 Acerca de @MultiDark

6 Tweets 62 Siguiendo 21 Seguidores 0 Listas

Imágenes Recientes



Similares a ti · [ver todos](#)

 **IaClasse** IaClasse
laclasse.com est l'espace numérique de travail (ENT)...

 **Mastermania** Mastermania Noticias
Guía de Masters y Postgrados

 **FaciLibro** Faci Libro

Summary of Activities during 2010 / 2011

- ▶ Publications
- ▶ Collaborations
- ▶ Calls – Postdoctoral (I) January 2010
- ▶ Calls – Postdoctoral (II) December 2010
- ▶ Calls – Predoctorals September 2010
- ▶ Calls – Summer Students Summer 2010/11
- ▶ Workshops
- ▶ Training
- ▶ Seminars
- ▶ Sponsorship
- ▶ In the media

Publications

Author	Title	ePrint
White, Martin; Blanton, M.; Bolton, A.; Schlegel, D.; Tinker, J.; Berlind, A.; da Costa, L.; Kazin, E.; Lin, Y. -T.; Maia, M.; McBride, C.; Padmanabhan, N.; Parejko, J.; Percival, W.; Prada, F.; et al.	The clustering of massive galaxies at $z \sim 0.5$ from the first semester of BOSS data	arXiv:1010.4915
Domínguez, A.; Primack, J. R.; Rosario, D. J.; Prada, F.; et al.	Extragalactic background light inferred from AEGIS galaxy-SED-type fractions	arXiv:1007.1459
L. Lopez Honorez, Carlos E. Yaguna	A new viable region of the inert doublet model	1011.1411
D.Meloni, S.Morisi, E.Peinado	Neutrino phenomenology and stable dark matter with A4	1011.1371
G. Mangano, G. Miele, S. Pastor, O. Pisanti, S. Sarikas	A refined constraint on lepton number from Big Bang Nucleosynthesis	1011.0916
J. A. Casas, J. M. Moreno, N. Rius, R. Ruiz de Austri, B. Zaldivar	Fair scans of the seesaw. Consequences for predictions on LFV processes	1010.5751
J. Aleksic et al. (MAGIC Collaboration)	Observations of the Blazar 3C 66A with the MAGIC Telescopes in Stereoscopic Mode	1010.0550
J. A. R. Cembranos, A. de la Cruz-Dombriz, A. Dobado, R. A. Lineros, A. L. Maroto	Photon spectra from WIMP annihilation	1009.4936
J. Aleksic et al. (MAGIC Collaboration)	Detection of very high energy gamma-ray emission from the Perseus cluster head-tail galaxy IC310 by the MAGIC telescopes	1009.2155
A.J. Cuesta, T.E. Jeltema, F. Zandanel, S. Profumo, F. Prada, G. Yepes, A. Klypin, Y. Hoffman, S. Gottloeber, J. Primack, M.A. Sanchez-Conde, C. Pfrommer	Dark Matter decay and annihilation in the Local Universe: CLUES from Fermi	1007.3469
J.A. Aguilar et al. (ANTARES Collaboration)	Performance of the front-end electronics of the ANTARES Neutrino Telescope	1007.2549

Publications of MultiDark members can be found in the [website](#)

91 publications during 2010

45 publications
from January to October 2011

Collaborations (I)

- ▶ MultiDark signed in June 2010 a MoU that enables its participation in the [Sloan Digital Sky Survey \(SDSS\)–III](#) as Associated Member

MultiDark leading scientist: Francisco Prada



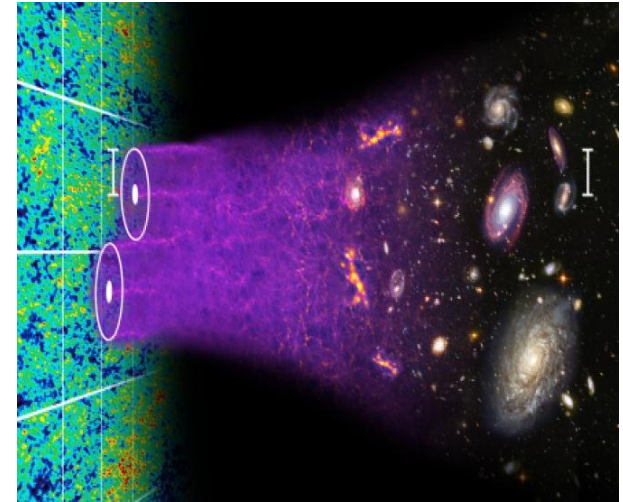
SDSS-III will collect data from 2008 to 2014, using the 2.5-meter telescope at Apache Point Observatory, Nuevo México (USA).

SDSS-III consists of four surveys, each focused on a different scientific theme

Collaborations (I)

The main area of interest for MultiDark in SDSS–III is [BOSS](#)

BOSS is a massive spectroscopic survey of galaxies and quasars over a large part of the sky
(spokesperson: David Schlegel, Berkeley Lab.)



- MultiDark–IAA group is already one of the authors of the first SDSS–III BOSS science paper

“The clustering of massive galaxies at $z \sim 0.5$ from the first semester of BOSS data”

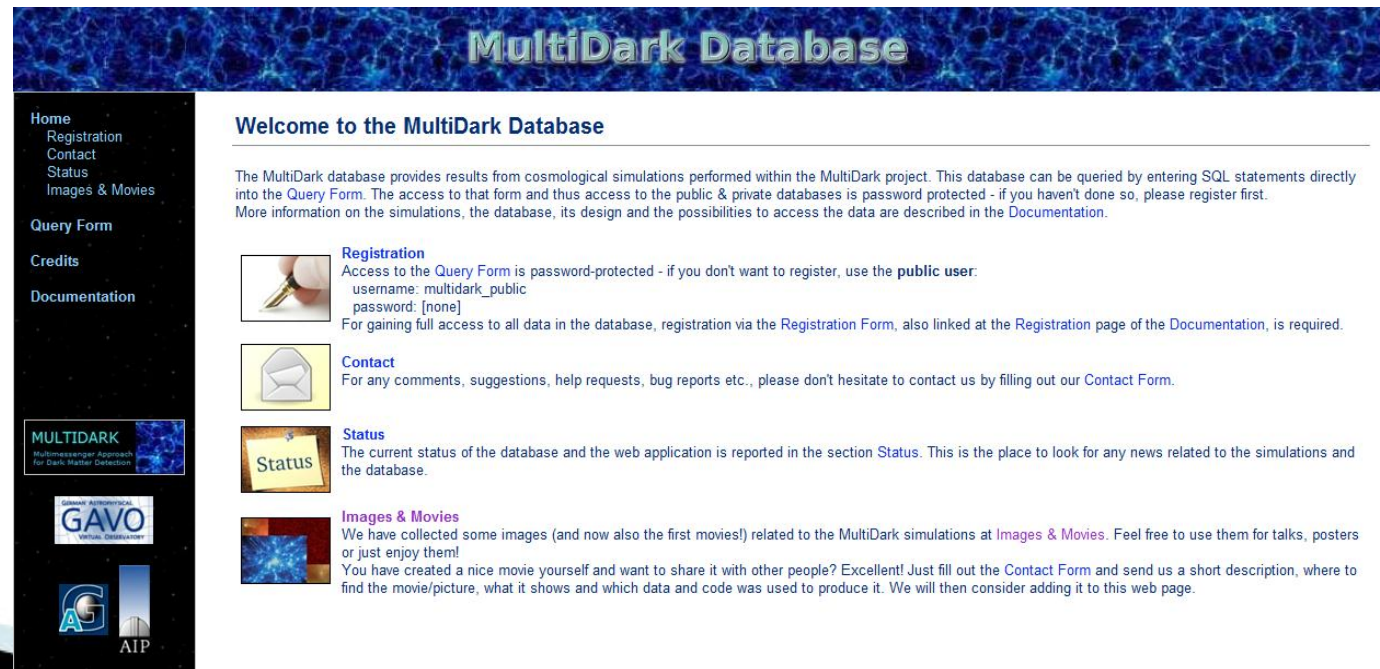
[arXiv:1010.4915](https://arxiv.org/abs/1010.4915) [[astro-ph.CO](#)]

Collaborations (II)

- MultiDark signed in August 2010 a MoU with the Astrophysikalisches Institut Potsdam (AIP) to develop a new astrophysical database.

MultiDark leading scientists: Francisco Prada, Stefan Gottlober

MultiDark database
was released
on April 2011



The screenshot shows the MultiDark Database website. The header features the title "MultiDark Database" in a stylized font against a blue, textured background. A left sidebar contains navigation links: Home, Registration, Contact, Status, Images & Movies, Query Form, Credits, and Documentation. Below these links are logos for "MULTIDARK Multimessenger Approach for Dark Matter Detection", "GAVO Virtual Observatory", and "AIP". The main content area is titled "Welcome to the MultiDark Database" and contains a paragraph explaining the database's purpose and access. It includes four sections with icons: "Registration" (pen icon) with login details (username: multidark_public, password: [none]) and a link to the Registration Form; "Contact" (envelope icon) with a link to the Contact Form; "Status" (notepad icon) with a link to the Status page; and "Images & Movies" (image icon) with a link to the Images & Movies page.

MultiDark Database

Home
Registration
Contact
Status
Images & Movies
Query Form
Credits
Documentation

WELCOME TO THE MULTIDARK DATABASE

The MultiDark database provides results from cosmological simulations performed within the MultiDark project. This database can be queried by entering SQL statements directly into the Query Form. The access to that form and thus access to the public & private databases is password protected - if you haven't done so, please register first. More information on the simulations, the database, its design and the possibilities to access the data are described in the Documentation.

Registration
Access to the Query Form is password-protected - if you don't want to register, use the **public user**:
username: multidark_public
password: [none]
For gaining full access to all data in the database, registration via the Registration Form, also linked at the Registration page of the Documentation, is required.

Contact
For any comments, suggestions, help requests, bug reports etc., please don't hesitate to contact us by filling out our Contact Form.

Status
The current status of the database and the web application is reported in the section Status. This is the place to look for any news related to the simulations and the database.

Images & Movies
We have collected some images (and now also the first movies!) related to the MultiDark simulations at Images & Movies. Feel free to use them for talks, posters or just enjoy them!
You have created a nice movie yourself and want to share it with other people? Excellent! Just fill out the Contact Form and send us a short description, where to find the movie/picture, what it shows and which data and code was used to produce it. We will then consider adding it to this web page.

MULTIDARK
Multimessenger Approach
for Dark Matter Detection

GAVO
Virtual Observatory

AIP

MultiDark database Website

<http://www.multidark.org>

The **MultiDark database** provides results from cosmological simulations performed within the **MultiDark project**

- Article presenting the database
“The MultiDark Database: Release of the Bolshoi and MultiDark Cosmological Simulations”
[arXiv:1109.0003 \[astro-ph.CO\]](https://arxiv.org/abs/1109.0003)

Home
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Images & Movies

Query Form

Credits

Documentation

MULTIDARK
Multimessenger Approach
for Dark Matter Detection

GAVO

AIP

MultiDark Database

Images and Movies

All images and movies provided here are free for download and usage in talks, posters, etc. For some images, higher resolution versions may be available on request - just send us an email with the image name, the required size, the purpose and a date when the image should be ready for you. Images for the Bolshoi simulation are available on the Bolshoi webpage.
Please give proper credit to the creator of the image/movie and the MultiDark project.

	Slice through the MultiDark simulation at redshift $z = 0.53$ (snapshot 62), different projections showing the density distribution. The slice is 5 Mpc/h thick, the side length is 1 Gpc/h (full box). (Stefan Gottlöber, IDL) x-y projection [eps, 650 KB] x-y projection [png, 800x800, 1.9 MB] y-z projection [eps, 650 KB] y-z projection [png, 800x800, 1.8 MB] z-x projection [eps, 650 KB] z-x projection [png, 800x800, 1.9 MB]
	Again a slice for redshift $z = 0.53$, but the slice is 10 Mpc/h thick. (Stefan Gottlöber, IDL) x-y projection [eps, 650 KB] x-y projection [png, 800x800, 2.0 MB] y-z projection [eps, 650 KB] y-z projection [png, 800x800, 1.9 MB] z-x distribution, centered on the most massive cluster: z-x projection [eps, 650 KB] z-x projection [png, 800x800, 2.0 MB]
	Slice through the MultiDark simulation at redshift $z = 0$ (snapshot 84), projected along the x-direction to view the y-z density distribution. The slice is again 5 Mpc/h thick. (Stefan Gottlöber, IDL) eps [1.1 MB] png [800x800, 1.8 MB]
	Gas density distribution of the most massive galaxy cluster (cluster 001) in a high resolution resimulation, x-y-projection. (Kristin Rebe, FIMview) high resolution png [1024x768, 1.9 MB] small resolution png [480x360, 880 KB]
	Evolution of the gas density in the high resolution resimulation of cluster 001. (Gustavo Yepes, Splotch) avi [1200x1200, 22 MB] jpg [1200x1200, 84 KB]
	Gas density distribution in the core of cluster 001. (Gustavo Yepes, Splotch) jpg [1600x1600, 229 KB]
	Evolution of the gas density in the resimulated cluster 007. (Gustavo Yepes, Splotch) avi [1200x1200, 20 MB] jpg [1200x1200, 79 KB]
	Evolution of the stellar density in the resimulated cluster 001. (Gustavo Yepes, Splotch) avi [1200x1200, 23 MB] jpg [1200x1200, 61 KB]

Collaborations (III)

► Research proposals of MultiDark to the [Fermi](#) collaboration:

- *Dark matter implications of Fermi-LAT measurements of anisotropies in the gamma-ray diffuse background

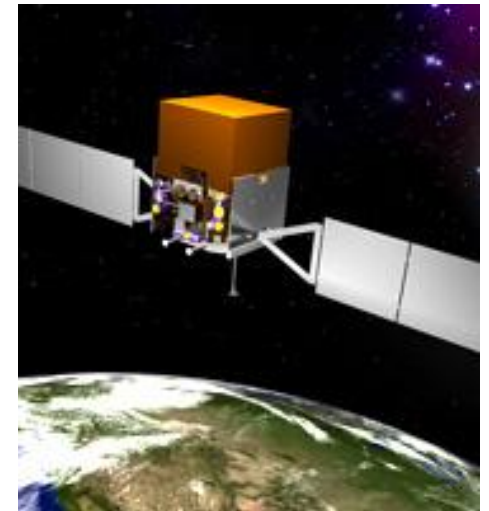
(approved in February 2011)

MultiDark leading scientist: Mattia Fornasa

- *The search of axion-like-particles with Fermi-LAT and IACTs

(under discussion)

MultiDark leading scientist: Miguel A. Sánchez-Conde



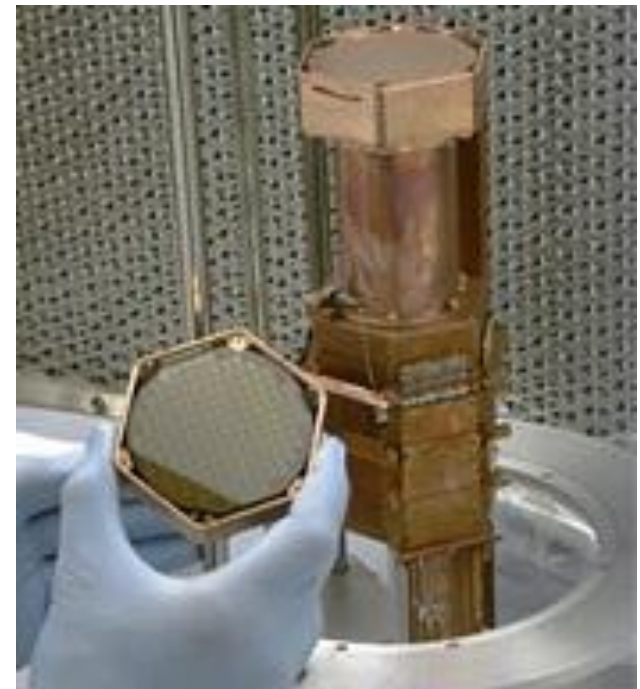
The Large Area Telescope (LAT) is the principal scientific instrument on the Fermi Gamma Ray Space Telescope spacecraft, launched on June 2008

Collaborations (IV)

- ▶ MultiDark signed in July 2011 a MoU that enables its participation in [CDMS](#) as Member.

MultiDark leading scientist: David G. Cerdño

- * CDMS is a direct detection experiment that uses Germanium crystals to search for WIMPs (spokesperson: Blas Cabrera, Stanford Univ.)
- * MultiDark-UAM/IFT group *is expected to contribute to the development of Monte Carlo background estimations, data analysis, and interpretation of SuperCDMS data. Also in utilizing theoretical developments in the field*



Currently: CDMS 4 kg at Soudan mine
In the future: SuperCDMS 15 kg at SNOLAB
...ton scale experiment

Collaborations (V)

- ▶ MultiDark signed in August 2011 a MoU that enables its participation in [COUPP](#) as Member

MultiDark leading scientists: Miquel Ardid, Juan Collar

- * COUPP is a direct detection experiment that uses bubble chambers to search for WIMPs (spokesperson: Juan Collar, Chicago Univ.)
- * MultiDark–UPV group *is expected to contribute to the development of acoustic detection techniques of the COUPP experiment*

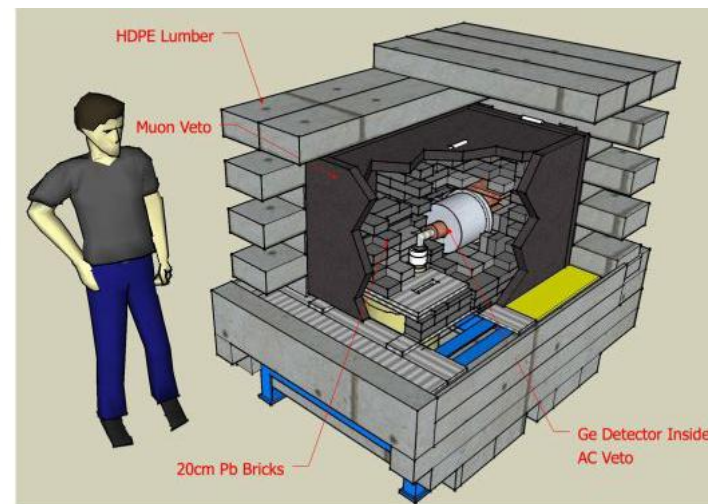
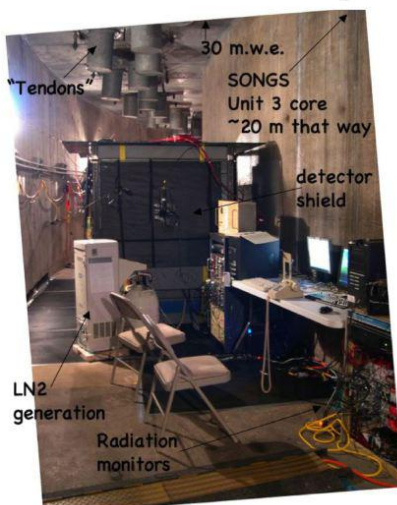
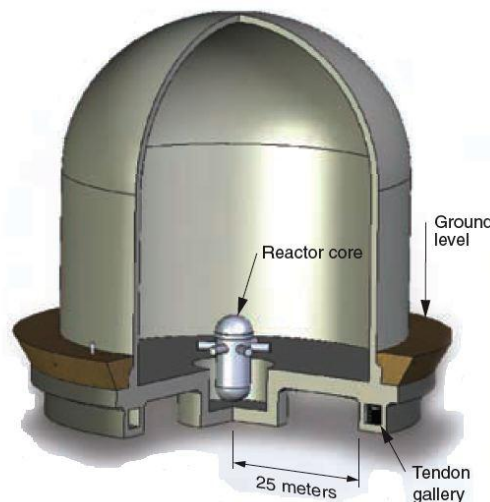


Currently: 4 kg at Fermilab
In the future: 60 kg at SNOLAB
...500 kg

► Coherent Neutrino Nucleus Scattering (CNNS) experiment

Juan Collar

As a by-product of the project
... still in progress



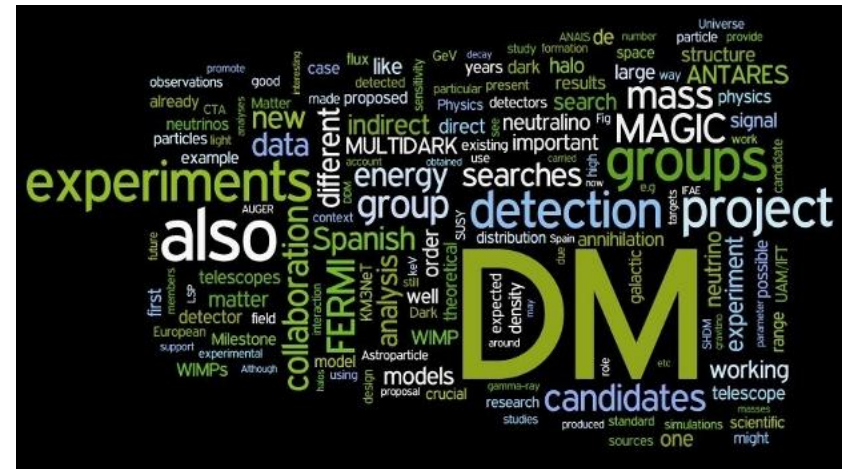
The nuclear power plant
of Vandellós II agreed to place
the experiment in its facilities

As a by-product of the project

Following the session “Contacts with industry” organized during the 4th MultiDark workshop, in Madrid, April 2011, IFIC-Exp group was granted recently with an INNPACTO project in collaboration with the company INDUSTA S.L., whose industrial activity is focusing on the manufacturing of industrial machinery related to different industrial processes



- › 1st Postdoctoral Call
- › deadline: 15th January 2010
- › **74** applications received
- › 2nd Postdoctoral Call
- › deadline: 7th December 2010
- › **98** applications received



Calls – Predoctorals

►Deadline: 30th September 2010

►70 online applications received

Predocs hired in 2010:

Miguel Peiró, 4 years, UAM/IFT

Muhammad Rehman, 4 years, IFCA & UHU

Ginevra Favole, 8 months, IAA

Adiv González, 4 years, IFAE

Viviana Gammaldi, 4 years, UCM–Th

Silvia Adrián, 4 years, UPV

Alex Vañó, 1 year, UIB

Predocs hired in 2011:

Irene Lozano, 3.5 años, UCM–GAE

Daniel Nieto, 6 months, UCM–GAE

Multimessenger Approach for Dark Matter Detection

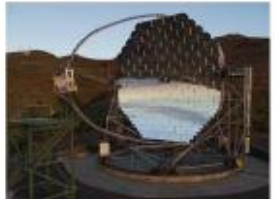
MultiDark CALL PREDOCTORAL RESEARCH

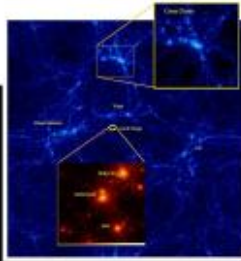
Consolider-Ingenio 2010 Project

Multimessenger Approach for Dark Matter Detection (MultiDark) is a CONSOLIDER project focused on the research of the nature of the dark matter of the Universe from a multidisciplinary perspective, covering all aspects of the problem: theoretical, astrophysical, cosmological and experimental. MultiDark offers to graduated students the opportunity to carry out a PhD Thesis in these fields.

MultiDark comprises 17 Spanish Research Groups, as well as several foreign members, performing theoretical analyses and contributing to the development of dark matter experiments as varied as ANAIS, ROSEBUD, EURECA, GAW, MAGIC, CTA, Fermi-GLAST, PAMELA, ANTARES, KM3NeT, AUGER, JEM-EUSO, LISA, SDSS-III/BOSS.

Application deadline: September 30th, 2010



Contact: susana.hernandez@uam.es

Information and applications: <http://projects.ift.uam.es/multidark>

MultiDark
Multimessenger Approach
for Dark Matter Detection

Funded by:        

Participants:       

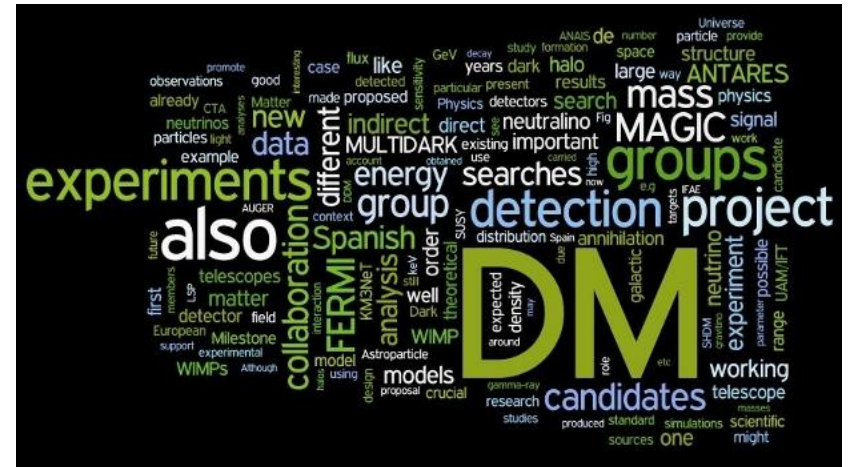
Technicians

2010:

Roger Firpo, 3 years, IFAE-PIC

2011:

Noelia Pacheco, 9 months, UAH



Calls – Summer Students

- ▶ Deadline: 20th June 2010
- ▶ Offered period: from July to September 2010
- ▶ 42 applications received
- ▶ Selected candidates:
 - ANAIS & ROSEBUD
 - Grupo UZ: Alberto Pérez (UV)
 - MAGIC
 - Grupo IFAE: Xavier Paredes (UB)
 - Grupo UCM–GAE: Víctor Martínez (UAM)
 - ANTARES & KM3NeT
 - Grupo IFIC–Exp: Elena Marimón (UV), Miguel González (US)
 - Grupo UPV: Maria Saldaña (UPV) , Miquel Crusells (UPC)

Estancias de investigación

Multimessenger Approach for Dark Matter Detection - MultiDark
Proyecto Consolider-Ingenio 2010

MultiDark ofrece a estudiantes de últimos cursos universitarios la oportunidad de integrarse durante una estancia de verano en alguno de los grupos de investigación que forman el proyecto en el campo de la Materia Oscura.

DE JULIO A SEPTIEMBRE 2010

Contacto: susana.hernandez@uam.es

Información y solicitudes:
<http://projects.ift.uam.es/multidark>

MULTIDARK
Multimessenger Approach
for Dark Matter Detection

Calls – Summer Students

- ▶Deadline: 31st May 2011
- ▶Offered period: from July to September 2011
- ▶35 applications received

- Selected candidates:

Theory & Astrophysics

UCM-Th: Adrián del Río, Santos J. Núñez

USAL: Víctor Moreno

IAA: Elena Barrios

ANNAIS & ROSEBUD

UZ: Alba E. Peláez

MAGIC

IFAE: Carlos Sánchez

UCM-GAE: Simon Bonnefoy

ANTARES & KM3NeT

UPV: Ivan F. Enguix

IFIC-Exp: Patricia Fernández, Javier Barrios

Estancias de investigación

Multimessenger Approach for Dark Matter Detection - MultiDark
Proyecto Consolider-Ingenio 2010

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Contacto: susana.hernandez@uam.es

Información y solicitudes:
<http://projects.ift.uam.es/multi-dark>

**DE JULIO A
SEPTIEMBRE
2011**

MultiDark
Multimessenger Approach for Dark Matter Detection

Fianciado por

Participantes

Workshops

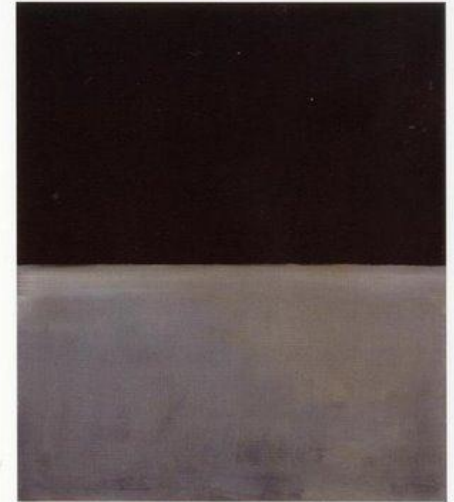
► 1st MultiDark Consolider Workshop

Shedding light in our dark Universe

UAM, Madrid, 25–27 January, 2010



57 participants



Mark Rothko - Black on Grey

Workshops

2nd MultiDark Consolider Workshop

Shedding light in our dark Universe

IFCA CSIC/UC, Santander, 28–30 June, 2010



55 participants



Workshops

3rd MultiDark Consolider Workshop

Shedding light in our dark Universe

CETA-Ciemat, Trujillo (Cáceres), 15–16 November, 2010



48 participants

3rd MultiDark Consolider Workshop
CETA-Ciemat, Trujillo (Caceres)
15th-16th November, 2010

Consolider-Ingenio 2010 project
Multimessenger Approach for Dark Matter Detection - MultiDark
More info: susana.hernandez@uam.es (MultiDark Office Manager),
francisco.prieto@ciemat.es and raul.ramos@ciemat.es (Local Organizers)
<http://projects.ift.uam.es/multidark>

Funded by:

4rd MultiDark Consolider Workshop

...one year later

Shedding light in our dark Universe

IFT-UAM/CSIC, Madrid, 4–6 April, 2011

102 participants

37 speakers (14 were external)

2 round tables

10 representatives of industries



Session on Wednesday about:
Technological and Industrial Opportunities of
MultiDark Experiments
-Contacts with Industry

- PHOTON LINES
- AVS
- LIDAX Space Engineering
- FRACTAL
- INDUSTA
- MASER MICRO
- TECNIBUSA
- SOLDADURAS PLANELLS
- TRINOS VACUUM PROJECTS
- HAMAMATSU PHOTONICS

4th MultiDark Consolider Workshop

...ONE YEAR LATER



IFT UAM/CSIC, New Building, Madrid,
4-6 April, 2011



Consolider-Ingenio 2010 project
Multimessenger Approach for Dark Matter Detection - MultiDark
More info: susana.hernandez@uam.es (MultiDark Office Manager)
<http://projects.ift.uam.es/multidark>



5th MultiDark Consolider Workshop

CIECEM, Matalascañas, Huelva

3–4 November, 2011

48 participants

5th MultiDark Consolider Workshop
CIECEM, Huelva
3 – 4 November, 2011

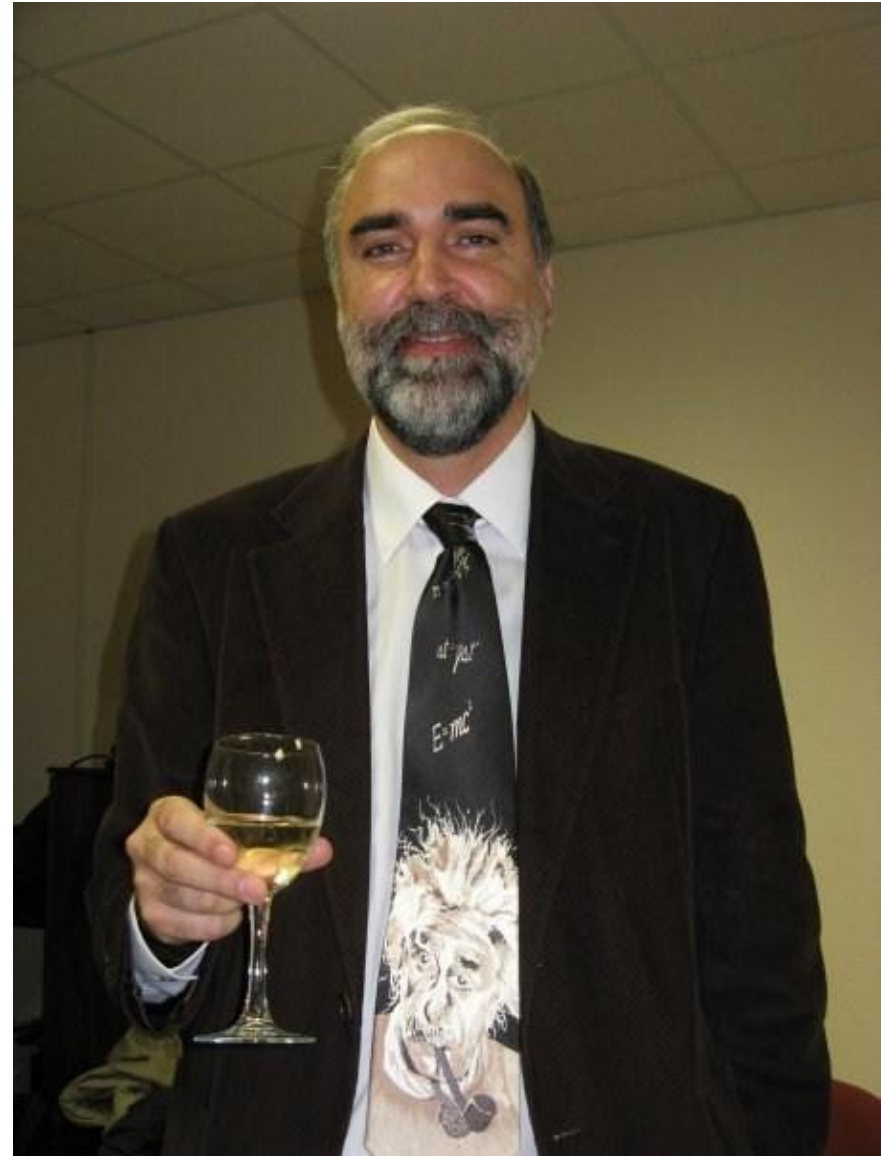


Consolider-Ingenio 2010 project
Multimessenger Approach for Dark Matter Detection - MultiDark
More info: susana.hernandez@uam.es (MultiDark Office Manager)
mario.gomez@dfa.uhu.es, mirco.cannoni@dfa.uhu.es,
jose.rodriguez@dfa.uhu.es (Local Organizers)
<http://projects.ift.uam.es/multidark>



Dear friends,
Sorry for not attending the RENATA meeting, but, as you can see, my duties in the MultiDark meeting in Matalascañas require all my effort

*Cheers,
Carlos*



Training



- ▶ MultiDark Training school organized:
 - School on Fermi science tools for Multidarkians
UAM, Madrid, 19–21 April, 2010



Seminars

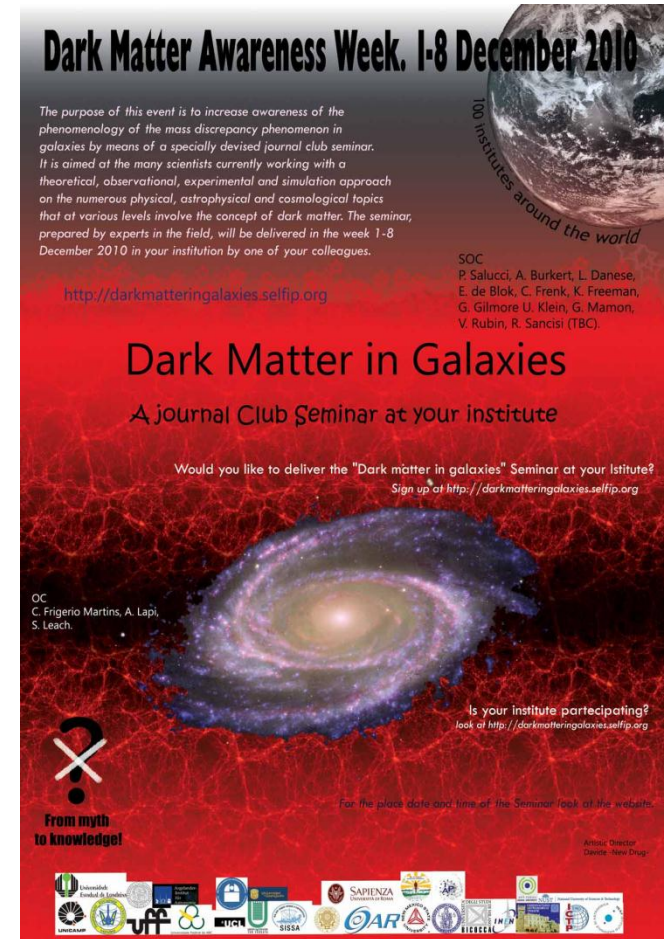
Dark Matter Awareness Week (DMAW)

1-8 December 2010

MultiDark contributed to the organization of the DMAW in Spain

8 Universities and research centers of the project participated in this activity:

IAA, UZ, UHU, UCM, UAM/IFT, IFAE, IAC and UAH



Dark Matter Awareness Week. 1-8 December 2010

The purpose of this event is to increase awareness of the phenomenology of the mass discrepancy phenomenon in galaxies by means of a specially devised journal club seminar. It is aimed at the many scientists currently working with a theoretical, observational, experimental and simulation approach on the numerous physical, astrophysical and cosmological topics that at various levels involve the concept of dark matter. The seminar, prepared by experts in the field, will be delivered in the week 1-8 December 2010 in your institution by one of your colleagues.

<http://darkmattergalaxies.selfip.org>

100 Institutes around the world

SOC
P. Salucci, A. Burkert, L. Danese,
E. de Blok, C. Frenk, K. Freeman,
G. Gilmore, U. Klein, G. Mamon,
V. Rubin, R. Sancisi (TBC).

Dark Matter in Galaxies

A Journal Club Seminar at your institute

Would you like to deliver the "Dark matter in galaxies" Seminar at your Institute?
Sign up at <http://darkmattergalaxies.selfip.org>

OC
C. Frigerio Martins, A. Lapi,
S. Leach

Is your institute participating?
look at <http://darkmattergalaxies.selfip.org>

For the place date and time of the Seminar look at the website

Artistic Director
Davide Nati

From myth to knowledge!

Logos of participating institutions: IAC, UAH, UCM, UAM/IFT, IFAE, UZ, UHU, IAA, INFN, SAPIENZA, CNR, INAF, ESO, CERN, etc.

<http://www.sissa.it/ap/dmg/participate.html>

Sponsorship

► MultiDark sponsored the following activities in 2010:

1. Constrained Local UniversE Simulations (CLUES) Workshop

La Cristalera, Madrid, 30 May – 5 June 2010

UAM/IFT

2. International School on Astroparticle Physics, ISAPP 2010

“Multi-Messenger Approach to Astroparticle Physics”

Univ. Zaragoza, 13–22 July, 2010

UZ

3. International Symposium on Particles, Strings and Cosmology, PASCOS 2010,

IFIC-Valencia, 19–23 July, 2010

IFIC-AHEP

4. VIII Curso de Astrofísica en Sigüenza. ASTROPARTÍCULAS: ¿de qué está hecho el universo?

Univ. of Alcalá de Henares, 27–30 July, 2010

UMU

5. Semana Española de las Astropartículas 2010

Activities in Spain, November 2010

UZ

Constrained Local Universe Simulations (CLUES) Workshop, La Cristalera, Madrid, 30 May – 5 June 2010



Semana Española de las Astropartículas 2010

ALCALÁ DE HENARES - MADRID - BARCELONA -
TENERIFE - GANDÍA - GRANADA - MURCIA - PALMA
DE MALLORCA - TRUJILLO - VALENCIA - SANTIAGO
DE COMPOSTELA - ZARAGOZA

Actividades por toda España - Noviembre 2010

www.astroparticle.org
www.i-cpan.es

<http://projects.ift.uam.es/multidark>
<http://fna.unizar.es/renata>



Activities sponsored in 2011:

6. Iberian Gravitational Waves Meeting 2011

Palma de Mallorca, February 2-4, 2011

UIB



7. XXXIX International Meeting on Fundamental Physics IMFP2011

Canfranc Underground Laboratory, February 7-11, 2011

UZ



Activities sponsored in 2011

8. [CLUES Workshop](#)

University of Sussex, UK, 6-10 Junio 2011

UAM/IFT

9. [1st Workshop on Flavor Symmetries and consequences in Accelerators and Cosmology - FLASY 2011](#)

11 – 14 July 2011, Valencia

IFIC-AHEP

10. [Spanish Relativity Meeting - ERE 2011](#)

Madrid, August 29 - September 2, 2011

UCM-Th

11. [Higgs Days at Santander 2011](#). Theory meets Experiment

Santander, 19 - 23 September 2011

IFCA

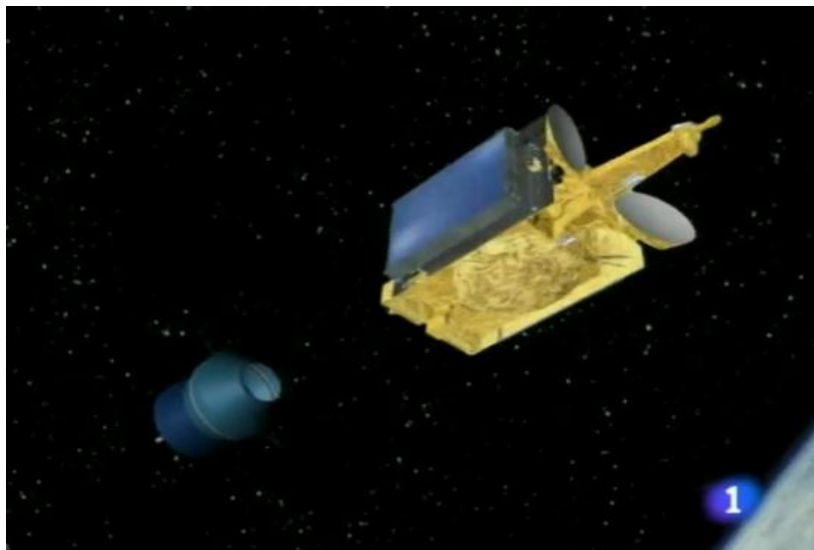
In the media

- ¿De qué está hecho el Universo?
Radio Interview Onda Regional de Murcia.
2 Dec 2009
- Cazadores españoles de Materia Oscura.
Newspaper Público. 19 Dec 2009
- MultiDark. Wikipedia. 24 Feb 2010
- Interview about MultiDark.
Newspaper La Vanguardia – 27 May 2010



In the media

2nd MultiDark Consolider Workshop.
TVE Cantabria. 29 June 2010



rtve



Telecantabria. (29/06/10)

In the media



- ▶ PASCOS 2010 & Dark Matter.
TVE Informatiu Comunitat Valenciana.
20 July 2010



- ▶ PASCOS 2010 & MultiDark.
Europa Press. 16 July 2010



In the media

- ## ►Mysteries of Science.

August 2010.

Magazine Quo

Quo



MultiDark

Multimessenger Approach
for Dark Matter Detection

In the media

3rd MultiDark Consolider Workshop.

Several Newspapers.

16 November 2010

el Periódico Badajoz

Extremadura Opinión España Internacional Economía Deportes Espectáculos Multimedia

Cáceres Plasencia Navalmoral Provincia de Cáceres Badajoz Mérida Vegas Altas Almodóvar de la Sierra

48 INVERSIÓN DEL PROYECTO MULTIDARK DE REUNIR PARA AVANZAR EN EL MAYOR ENIGMA CIENTÍFICO.

La materia oscura busca respuesta en Trujillo

Más de 100 de expertos, algunos del Ceta-Ciemat, indagaron sobre el universo.

16/11/2010 G. MORAL

COMENTARIOS Enviar Imprimir Evaluación Añadir a tu blog

Combustible para las naves espaciales en la serie Futurama o un componente mágico para crear pociones en la película Final Fantasy. En la ciencia ficción la materia oscura tiene propiedades extraordinarias pero en la vida real es uno de los mayores retos científicos al que investigadores de todo el mundo intentan dar respuesta 70 años después de su descubrimiento. Ese es el fin con el que se reúnen desde ayer y hasta hoy más de 40 expertos en el Centro Extremeño de Tecnología Avanzada Ceta-Ciemat Trujillo, donde ponen en común el primer año del trabajo que desarrollan conjuntamente y en el que seguirán trabajando hasta el 2014 más de un centenar de científicos.



Científicos del país y extranjeros participantes en el proyecto MultiDark, ayer en el Ceta-Ciemat. Foto:CECEDA

HOY.es

Extremadura Deportes Economía Más Actualidad Opinión y TV Ocio Participa Blogs Servicios Multimedia

Badajoz Cáceres Mérida Plasencia Provincia de Badajoz Provincia de Cáceres Provincia de Mérida Vegas Altas Almodóvar de la Sierra

Última noticia de hoy.es

Trujillo acogerá un congreso con más de 40 expertos en la materia oscura

Agencia EFE

Mérida, 11 nov (EFE).- Un congreso reunirá mañana y el martes en el Centro Extremeño de Tecnología Avanzada Ceta-Ciemat de Trujillo (Cáceres) a más de 40 expertos en el campo de la materia oscura, uno de los grandes enigmas científicos, procedentes de universidades e institutos de investigación españoles y extranjeros.

En concreto, se trata del tercer congreso del proyecto Consolider-Ingenio 2010 "Multimessenger Approach for Dark Matter Detection - MultiDark", según ha informado la organización, el Ceta-Ciemat, en un comunicado remitido a EFE.

Este proyecto, financiado por el Ministerio de Ciencia e Innovación y coordinado por la Universidad Autónoma de Madrid y el Instituto de Física Teórica IFT-UAM-CSIC, tiene como objetivo principal el estudio de uno de los grandes enigmas científicos que aún queda por resolver, la existencia de la materia oscura.

Elaborar de qué está hecha esta materia "permitirá dar un salto gigantesco en la comprensión del universo", según la organización.

En "tridimensional", se desarrollan tres líneas de investigación complementarias: se proponen y analizan partículas candidatas a materia oscura, se estudian cómo se forman los halos galácticos y se contribuye al desarrollo de experimentos que puedan detectarlos.

Todo esto se lleva a cabo aprovechando las infraestructuras experimentales en las que participan los grupos que forman "MultiDark" e impulsando la participación en otros que tienen un gran potencial.



CONVERTIDOR DE DIVISAS

INGENIERO DIRECTO

cuota NAJANJA

YO SOY AHORRADORORA

35% T.A.E. a 4 meses

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• Una plancha de acero desde la Cabaña.
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Última Hora

Noticias agencias

Trujillo acogerá un congreso con más de 40 expertos en la materia oscura

14-11-2010 18:24 h

Mérida, 11 nov (EFE).- Un congreso reunirá mañana y el martes en el Centro Extremeño de Tecnología Avanzada Ceta-Ciemat de Trujillo (Cáceres) a más de 40 expertos en el campo de la materia oscura, uno de los grandes enigmas científicos, procedentes de universidades e institutos de investigación españoles y extranjeros.

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Por comunidades

- Andalucía
- Aragón
- Baleares
- Canarias
- Cantabria
- Castilla-La Mancha
- Castilla y León
- Cataluña
- Extremadura
- Galicia
- Comunidad Valenciana
- País Vasco

LEY ANTI-TABACO: PROHIBICIÓN TOTAL EN LUGARES PÚBLICOS

Vote ahora y gana un MERCEDES

A favor En contra

adn.es / Tecnología

Sábado, 06 de enero de 2011. Actualizado a las 15:25h | Castellón: 18°/11°

Portada Local Actualidad La Vida Deportes Cultura & Ocio Televisión & Radio Opinión

adn tecnología

Trujillo acoge mañana un congreso con más de 40 expertos en la materia oscura

EFE | Mérida | 14/11/2010 | Comenta | Votar +0 -0 | Imprimir

Un congreso reunirá mañana y el martes en el Centro Extremeño de Tecnología Avanzada Ceta-Ciemat de Trujillo (Cáceres) a más de 40 expertos en el campo de la materia oscura, uno de los grandes enigmas científicos, procedentes de universidades e institutos de investigación españoles y extranjeros.

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In the media

3rd MultiDark Consolider Workshop.
TVE Extremadura. 16 November 2010



rtve



MultiDark

Multimessenger Approach
for Dark Matter Detection

In the media

5th MultiDark Consolider Workshop.

Several Media.

26 October 2011

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informativostelecinco.com

Inicio Lo último Nacional Economía Tecnología Sociedad Deportes

ES NOTICIA > Unión Europea · Paro · Apple · Peces Barba · Mariano Rajoy · Blogs · I

Más de 40 investigadores debatirán sobre el enigma de la materia oscura en el Ciecem

26.10.11 | 19:10h. EUROPA PRESS | HUELVA

El quinto congreso organizado por el proyecto de investigación Consolider-Ingenio 2010 'Multimessenger Approach for Dark Matter Detection-MultiDark' se celebrará del 3 al 4 de noviembre de 2011 en el Centro Internacional de Estudios y Convenciones Ecológicas y Medioambientales (Ciecem) de la Universidad de Huelva, situado en Matalascañas.

Este encuentro reunirá a más de 40 investigadores expertos en el campo de la materia oscura, procedentes de 18 universidades e instituciones de investigación españolas, así como de varios centros extranjeros.

europapress.es últimas noticias

Viernes, 28 de octubre 2011

NACIONAL > twitter @Eleccion2011 Europa-Press-Elecciones-20-11 YouTube/europapress

DESTACADAS Detenido en Bélgica un etarra reclamado por España por atentados en los 80 La izquierda abertzale pide a López que abra un diálogo "bilateral" con Navarra La OTAN decide la misión de 6

Más de 40 investigadores debatirán sobre el enigma de la materia oscura en el Ciecem

Directorio Centro Internacional Estudios Convenciones Ecológicas Medioambientales Dark Matter Detection MultiDark Programa Consolider Ingenio Ministerio Ciencia Ciecem

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HUELVA, 26 Oct. (EUROPA PRESS) -

El quinto congreso organizado por el proyecto de investigación Consolider-Ingenio 2010 'Multimessenger Approach for Dark Matter Detection-MultiDark' se celebrará del 3 al 4 de noviembre de 2011 en el Centro Internacional de Estudios y Convenciones Ecológicas y Medioambientales (Ciecem) de la Universidad de Huelva, situado en Matalascañas.

lainformacion.com ¡Hablamos con Twitter!

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Viernes, 28 de octubre de 2011 - 19:24

Secciones > Ciencia Medio ambiente Astronomía Biología Geología Meteorología El tiempo

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Más de 40 investigadores debatirán sobre el enigma de la materia oscura en el Ciecem

26/10/2011 | lainformacion.com

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Deja tu comentario [0]

HUELVA, 26 (EUROPA PRESS)

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ENERGÍA POR UN FUTURO SOSTENIBLE

LAVOZLIBRE Director: Manuel Romero

Viernes, 28 de octubre de 2011

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ULTIMA HORA

Más de 40 investigadores debatirán sobre el enigma de la materia oscura en el Ciecem

Europa Press

miércoles, 26 de octubre de 2011, 19:34

HUELVA, 26 (EUROPA PRESS)

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A lo largo de los dos días programados tendrán lugar varias sesiones dedicadas a discutir los desarrollos del proyecto durante los últimos meses.

Evaluation of the first year of the project (2010)



MINISTERIO
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DE INVESTIGACIÓN

Carlos Muñoz López
Universidad Autónoma de Madrid
Facultad de Ciencias
Dpto. Física Teórica
Sector Pueblos 30, 4ª
Tres Cantos
28760 Madrid

901064

Ref. CSD2009-00064

Madrid, 4 de octubre de 2011

Se ha recibido en esta Subdirección el informe anual correspondiente al proyecto Consolider citado en la referencia, del cual es usted investigador coordinador.

Me complace comunicarle que la evaluación del mismo ha sido positiva, de acuerdo con el informe de los gestores del programa Consolider.

Atentamente,

Anibal González Pérez
Subdirector general de proyectos de investigación



Ramírez de Arellano, 29
28071 Madrid
Tel. 916 037 764
Fax 916 037 013

SEGUIMIENTO Anualidad 2010

Proyecto CSD2009-00064

Investigador Coordinador: Carlos Muñoz López

Producción científica: A (Excelente) ←

Los objetivos del proyecto se están cumpliendo. La productividad científica es alta (91 artículos) en revistas de alto nivel.

Nuevas sinergias: B (Buena) ←

Hay un alto nivel de colaboración entre los diferentes grupos del proyecto.

Transferencia de Conocimiento: C (Razonable) ←

No se especifican patentes o transferencias de tecnología en el informe

Visibilidad: A (Excelente) ←

Muy alta

Internacionalización A (Excelente) ←

Muy alta en los participantes y en el número de visitantes.

[illegible]