

L4: Baryogenesis, dark matter and cosmic messengers

Coordinators:

Óscar Vives, Juande Zornoza and Sergio Palomares

L4: Baryogenesis, dark matter and cosmic messengers at IFIC...

Coordinators:

Óscar Vives, Juande Zornoza and Sergio Palomares

L4: Baryogenesis, dark matter and cosmic messengers at IFIC...

Matter-antimatter asymmetry

(mainly via leptogenesis)

Coordinators:

Óscar Vives, Juande Zornoza and Sergio Palomares

L4: Baryogenesis, dark matter and cosmic messengers at IFIC...

Matter-antimatter asymmetry

(mainly via leptogenesis)

collider and indirect
dark sector searches

Dark matter
(experiment and theory/phenomenology)

model building,
phenomenology
(cosmo, astro, colliders, etc.)

Coordinators:

Óscar Vives, Juande Zornoza and Sergio Palomares

L4: Baryogenesis, dark matter and cosmic messengers at IFIC...

Matter-antimatter asymmetry

(mainly via leptogenesis)

collider and indirect
dark sector searches

Dark matter
(experiment and theory/phenomenology)

model building,
phenomenology
(cosmo, astro, colliders, etc.)

(mainly neutrinos)

Cosmic messengers
(from astrophysical sources)

Coordinators:

Óscar Vives, Juande Zornoza and Sergio Palomares

Dark matter faces



Dark matter faces

MODEL BUILDING AND PRODUCTION MECHANISMS



Dark matter faces



MODEL BUILDING AND PRODUCTION MECHANISMS

ASTRO/COSMO PROBES

BBN, CMB, 21cm, structure formation...

Dark matter faces



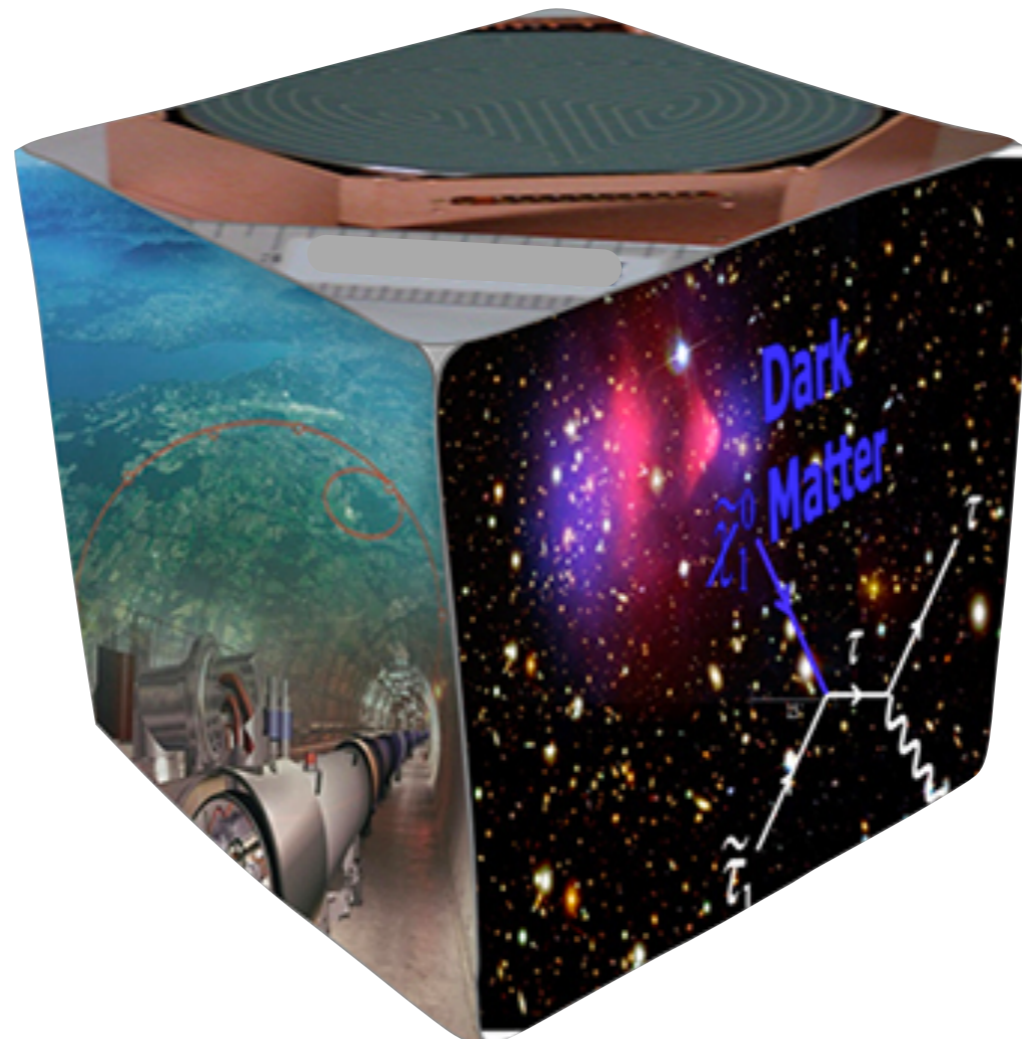
MODEL BUILDING AND PRODUCTION MECHANISMS

ASTRO/COSMO PROBES

BBN, CMB, 21cm, structure formation...

DIRECT DETECTION

Nuclear recoil produced by DM scattering



ACCELERATOR SEARCHES

LLPs, Missing energy, mono-jets (bosons)

INDIRECT DETECTION

Products of DM annihilation/decay

Theory

Dark matter model building and its connection to other problems

Talk by Avelino Vicente

... and many others at IFIC:

V. De Romeri, A. Donini, C. Gross, C. Hagedorn,
J. Herrero, M. Hirsch, O. Medina, N. Rius,
A. Santamaría, V. Sanz, J. Valle...

Dark matter production mechanisms in the early Universe and
their phenomenological implications

Talk by Juan Herrero

... and others at IFIC:

C. Cosme, C. Gross, A. Gupta,
G. Landini, A. Muñoz, N. Rius, D. Vatsyayan,...

Theory

Cosmological and astrophysical observables:
impact of dark matter structure formation,
primordial black holes, compact objects...

Talk by Bryan Zaldivar

... and others at IFIC:

D. Agius, V. De Romeri, A. Gupta,
O. Mena, S. Palomares, M. Tórtola...

Global analyses and machine learning applications

Talk by Roberto Ruiz

... and others at IFIC:

V. Sanz, B. Zaldivar... and experimental groups

Theory

Axion-like dark matter and its phenomenology

Talk by Camilo García

... and few others at IFIC:

V. De Romeri, P. Hernández, S. Urrea, J. Valle,...

Matter-antimatter asymmetry generation

(via leptogenesis in testable scenarios)

Talk by Jacobo López

... and many others at IFIC:

G. Barenboim, C. Cosme, C. Hagedorn,
P. Hernández, J. Herrero, M. Hirsch, N. Rius,
S. Sandner, J. Valle, O. Vives, J. Zurita...

Experiment



Dark matter axions with microwave resonators

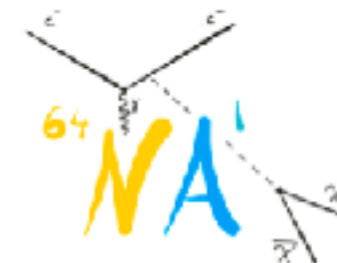


Talk by Benito Gimeno

AITANA group

...recently in collaboration with the theory side

Dark sector searches: NA64 @ CERN
searches of decays of dark mediators
and constraints on BSM scenarios



Talk by Laura Molina

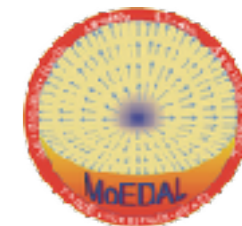
... strong connections with theory work at IFIC

C. Hagedorn, M. Hirsch, J. López,

V. Sanz, O. Vives, J. Zurita...

Experiment

MAPP - MoEDAL Apparatus for Penetrating Particles
neutral and milli-charged long-lived particles



Talk by Vasiliki Mitsou

other IFIC members:

E. Musumeci, J. Papavassiliou, R. Ruiz, V. Vento, O. Vives



Searches of long-lived particles at LHC



Talk by Emma Torr 

ATLAS and LHCb groups and in Mathusla also J. Zurita

... strong connections with theory work at IFIC

C. Hagedorn, M. Hirsch, J. L pez,
V. Sanz, O. Vives, J. Zurita...

Experiment



Dark matter indirect searches with neutrinos:
from the galactic center, the Sun...



Talk by Rebecca Gozzini

... strong connections with theory work at IFIC
A. Gupta, S. Palomares, M. Tórtola...

Neutrino astronomy:

Potential correlations with other messengers: GRBs, AGNs, CCSN...

Talk by Paco Salesa

... connections with theory work at IFIC
O. Mena, S. Palomares...

Should we redefine lines L4 and L5?

L4:

Baryogenesis, dark matter and cosmic messengers

L5:

Gravity and dark Universe

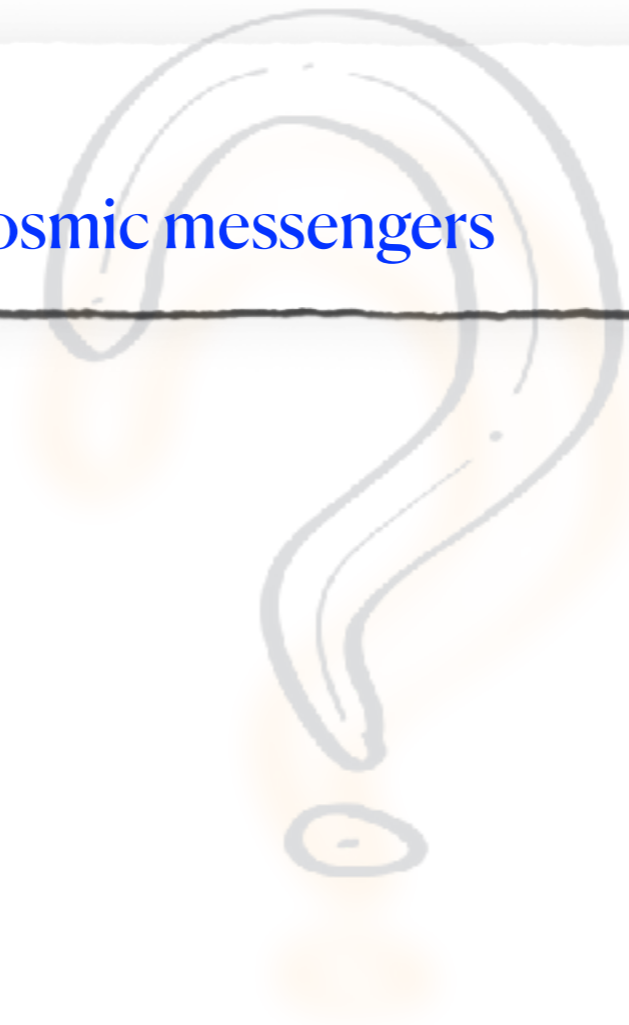
Should we redefine lines L4 and L5?

L4:

Baryogenesis, dark matter and cosmic messengers

L5:

Gravity and dark Universe



Should we redefine lines L4 and L5?

L4:

Baryogenesis, dark matter and cosmic messengers

L5:

Gravity and dark Universe

L4:

Gravitation and Cosmology

Black holes

Modified gravity

Gravitational waves

Quantum aspects of gravity

Early Universe (inflation, reheating, phase transitions,
cosmic strings...)

Baryogenesis

Dark matter

CMB/21 cm

Cosmic messengers (including gravitational waves)

Should we redefine lines L4 and L5?

L4:

Baryogenesis, dark matter and cosmic messengers

L5:

Gravity and dark Universe

L4:

Gravitation and Cosmology

Black holes

Modified gravity

Gravitational waves

Quantum aspects of gravity

Early Universe (inflation, reheating, phase transitions, cosmic strings...)

Baryogenesis

Dark matter

CMB/21 cm

Cosmic messengers (including gravitational waves)

L4. Cosmology and Astroparticles

Early Universe

Baryogenesis

Dark matter

CMB /21 cm

Cosmic messengers (neutrinos only?)

L5. Gravitation

Black holes

Modified gravity

Gravitational waves - theory

Gravitational waves - detection

Quantum aspects of gravity