

WG4

2023/3/29

Agenda

<https://agenda.infn.it/event/35345/>

Talks

Experiments: Microcalorimeters at Heidelberg - L Gastaldo

Models: Spin 2 ULDM - F Urban

Discussion:

- 1) Organization of the sub-working group for exclusion plots
- 2) Outline of the report on direct searches

<https://docs.google.com/spreadsheets/d/16Uc43KXxWPGfMJSjA-lle4gDhvl4aRrzWI8vJimIC6s/edit?usp=sharing>

Name	Institute	Favourite WISP	Experiment	Technology	Available as a Report Editor	Contact for a WG	Contact for Experiment
Claudio Gatti	INFN - LNF	Axion; Dark Photon	QUAX; FLASH	Microwave cavities and devices	yes		
Venelin Kozhuharov	Sofia University	Dark photon, ALP	PADME, ALICE	fixed target & colliders	yes		
Dmitry Budker	HIM JGU Mainz	All kinds of UBDM	CASPER, GNOME, atomic and molecular spectroscopy	NMR, spectroscopy,...	OK		
Federico Urban	CEICO, FZU, Prague	Spin-2 ultra-light			no	WG3	
Gianluca Lamanna	Pisa University INFN	Axion, ALPs	FLASH, NA62	Microwave antennas and devices	no		
Attila J. Krasznahorkay	ATOMKI, Debrecen	X17, Dark photon, ALP	8Be, 4He, 12C ATOMKI	Anomalous internal pair creation in nuclear transitions	no		
Loredana Gastaldo	KIP, Heidelberg	axion, ALPs	IAXO	mK detectors, SQUIDS	yes		
Yasar Hicyilmaz	Balikesir University	Dark photon, X17			no		
Igor G. Irastorza	CAPA-Zaragoza	axion, ALPs	IAXO, RADES	Micromegas x-ray detectors, low-background, radiopurity			
Julia K. Vogel	CAPA-Zaragoza	Axion, ALPs	IAXO, NuSTAR	X-ray telescopes, multilayers, Wolter	yes		
David J. E. Marsh	King's College London	axions and ALPs	-	Quasiparticle materials	yes		
Michele Gallinaro	LIP, Lisbon	axions, ALPs, dark photons	CMS	collider	yes		
Cristian Cogollos	MPP, Munich	axions and ALPs	RADES, IAXO	Microwave cavities	no		RADES
Giovanni Cantatore	INFN Trieste	axions and ALPs, chameleons and DE, streaming DM, BSM physics	CAST, Muon G-2, MUonE, KWISP	optomechanical force sensors, particle detector diagnostics	yes		
Zoran D. Grujić	Institute of Physics Belgrade	axions and ALPs	nEDM, GNOME, atomic spectroscopy, accurate magnetometry	Laser spectroscopy, magnetic resonance			nEDM, GNOME if needed with Dmitry Budker
Stepan Kunc	TUL Liberec	axions	VMB@CERN, LSW experiments	Laser experiments			
Hugo Terças	IST - Lisbon	axions		Plasma/metamaterials experiments	no		
Sebastian Ellis	University of Geneva	axions, ALPs, dark photons			yes		
Jose Cembranos	IPARCOS-UCM, Madrid	ALPs, dark photons, dark gravitons, branons	-	Laser spectroscopy, collider		WG2	
Serkant Cetin	Istinye University	Axions and BSM physics	CAST, ATLAS, BESIII	Gaseous detectors (drift tubes, rpc's), collider experiments, helioscope/haloscope	yes	WG5	ATLAS
Mario Reig	University of Oxford	axions, ALPs		Storage rings	yes	WG1	
Giuseppe Messineo	INFN Ferrara	axions, ALPs, dark photons	VMB@CERN, former ALPS II, PHYDES	Polarimetry, laser spectroscopy	no		
Federico Nguyen	ENEA. Frascati	axions, ALPs, dark photons	FLASH/Interest in LSW experiments	Intense LSW sources, uWave devices	no		
Dieter Horns	Universität Hamburg	axions, ALPs, dark photons	BRASS, WISPLC, WISPMI	microwave, laser, low noise cryo detectors	not sure, yet!		
Philipp Haslinger	TU Wien	Chameleons, DE, Dark photons	Levitated atom interferometry (optimized for shorter range forces) and electron interferometry	atom and electron interferometry			
Ciaran O'Hare	U. Sydney	axions, ALPs, dark photons, dilatons			Yes		
Alejandro Díaz	Polytechnic Univers.Cartagena	axions, ALPs	RADES, IAXO	Microwave cavities	No		
Giovanni Grilli di Cortona	INFN Roma1	axions, ALPs, dark photons					
SungWoo Youn	IBS-CAPP	Axion, dark photon	CAPP	Microwave cavities	Yes		CAPP
Ali CELIK	Burdur Mehmet Akif Ersoy University	BSM	CMS	GEM	Not sure yet		

EU Roadmap to WISPs

Eperiments listed in the spreadsheet:

QUAX FLASH CASPEr GNOME RADES WISPLC WISPMI CAPP BRASS PHYDES KWISP

ALPS II VMB@CERN

IAXO CAST

NA62 CMS ATLAS BESIII

PADME ATOMKI

G-2 nEDM MUonE

NuSTAR

Levitated atoms, atomic and molecular spectroscopy

Models:

Axions, dark photon, Chameleons, dark energy

Common R&D:

Devices, SC cavities, ...

Available technology

Infrastructures

Connections

sub-working group for exclusion plots

- Start with existing EU results in AxionLimits to do only EU plot
- Add missing Experiments
- Collect info

Report

- Start with 1 or 2 page per experiment?

Meeting outcomes

- Collect 1 or 2 pages for each EU experiment on WISPs
- Collect 1 or 2 pages for EU each infrastructure related to WISPs
- Collect 1 or 2 pages on ongoing R&D in EU related to WISPs
- Produce first plots with only EU experiments from AxionLimits

- Next Technology Forum could be on Quantum Sensing and Devices