TPPC — Theoretical Particle Physics and Cosmology

Pisa, Firenze, Roma 1

INFN

Istituto Nazionale di Fisica Nucleare

Sezione di Pisa

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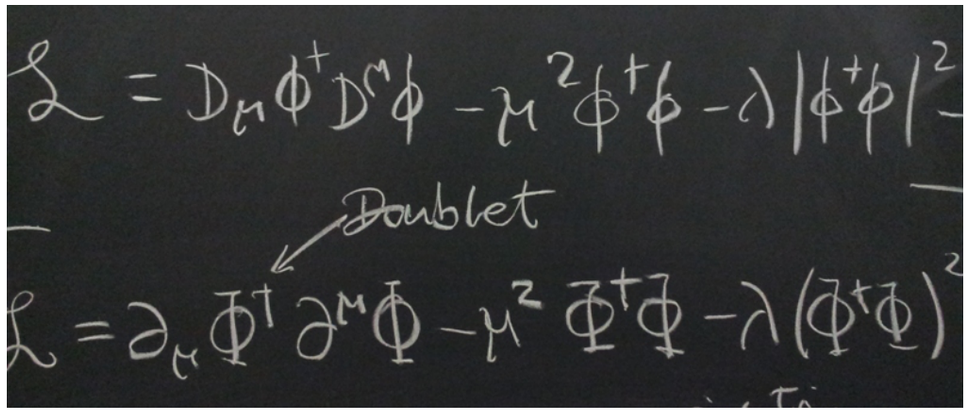
Keywords: Beyond the Standard Model – collider physics – flavour physics dark matter – astro-particle physics – early universe – gravitational waves

Linee di ricerca

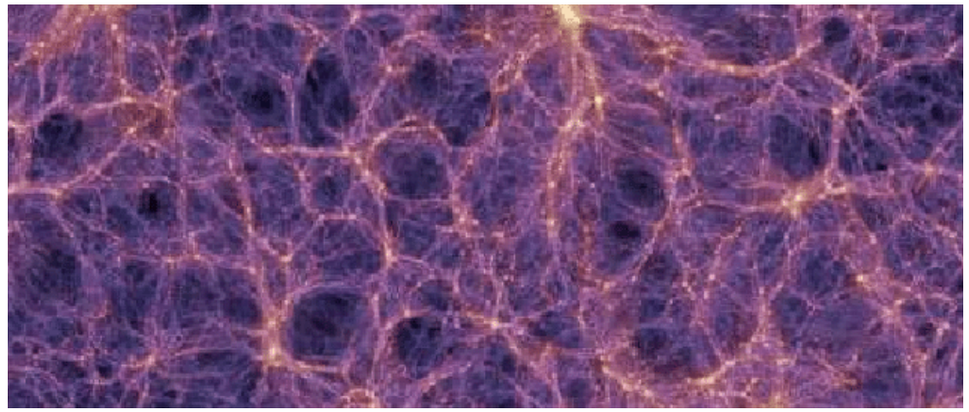


Beyond the Standard Model

- SM extensions at and above the TeV scale
- Experiments at intensity frontier and light new particles
- Flavour physics

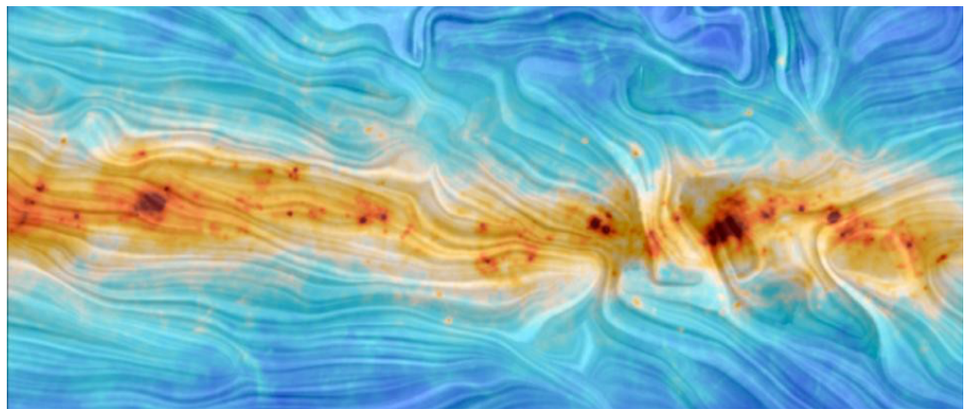
Collider Phenomenology

- LHC physics and future colliders
- Precision measurements and collider searches through machine learning



Dark Matter

- DM models in gauge theories and beyond
- Indirect and direct detection experiments
- Light DM and axions



Gravity and Cosmology

- Gravitational waves from BSM physics
- Compact mergers and weakly coupled new physics

Attività di ricerca (sezione di Pisa)

Circa 25 pubblicazioni nel periodo 2021-2022

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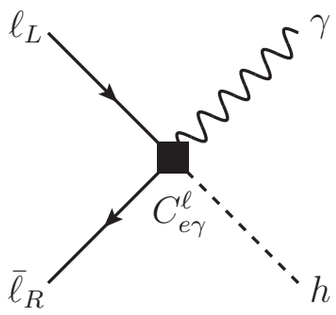
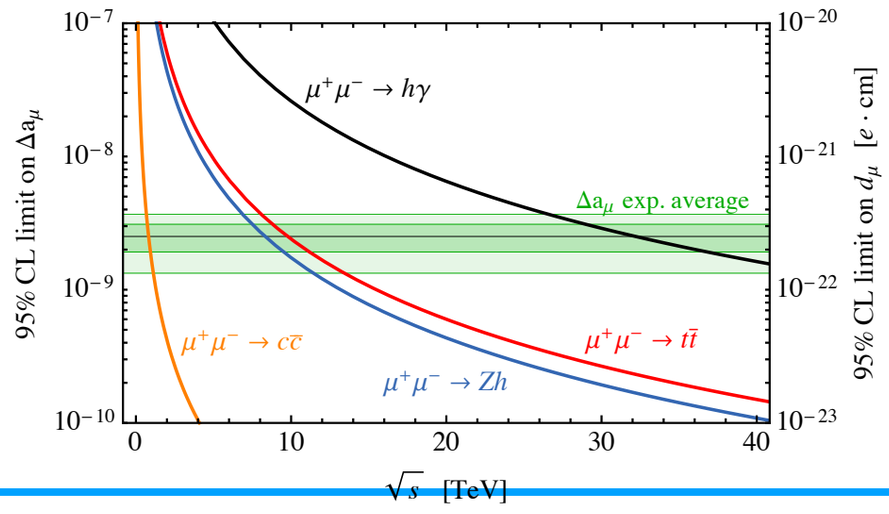
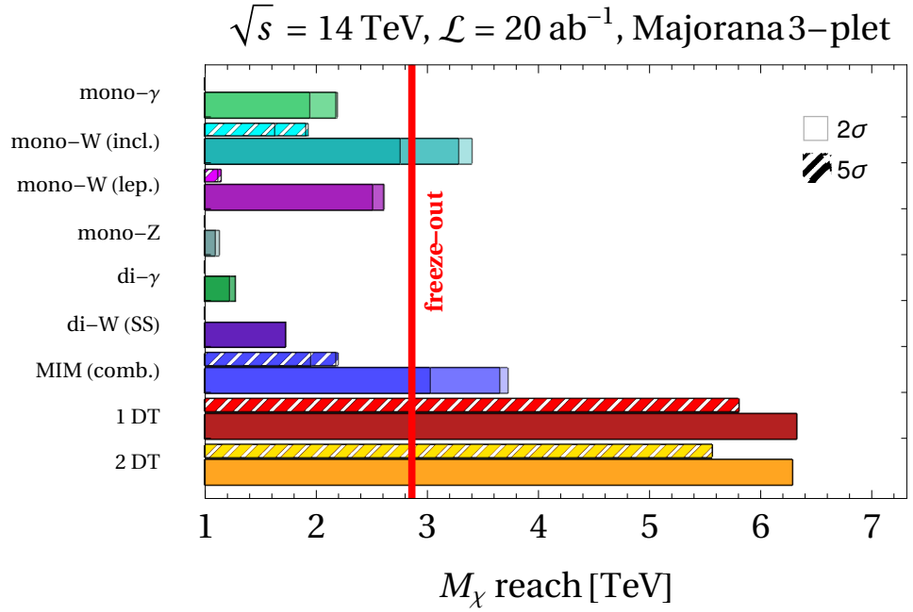
Muon Collider physics potential

muon g-2, tau g-2 (in progress),

Higgs and EW, flavor physics, WIMPs







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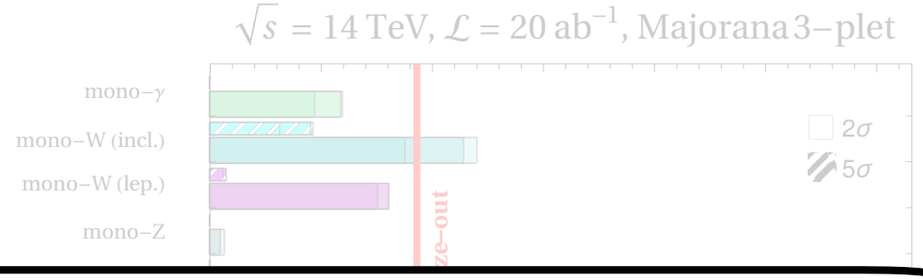
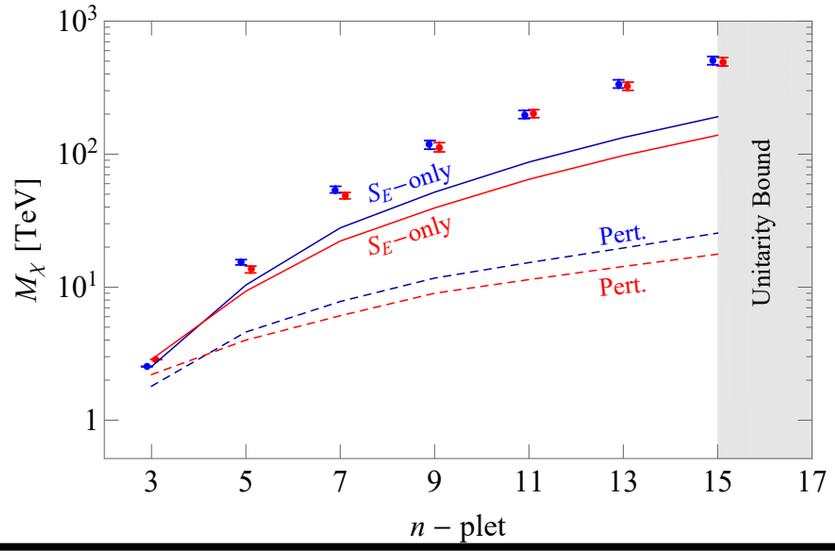
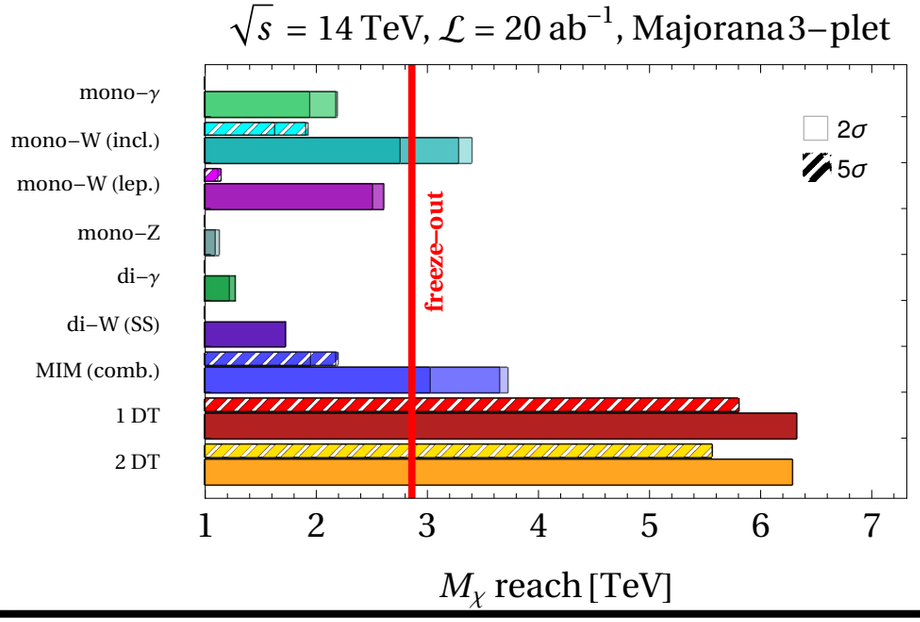


WIMP Dark Matter

th. prediction of freeze-out abundance for general EW multiplets,

direct/indirect detection, collider studies





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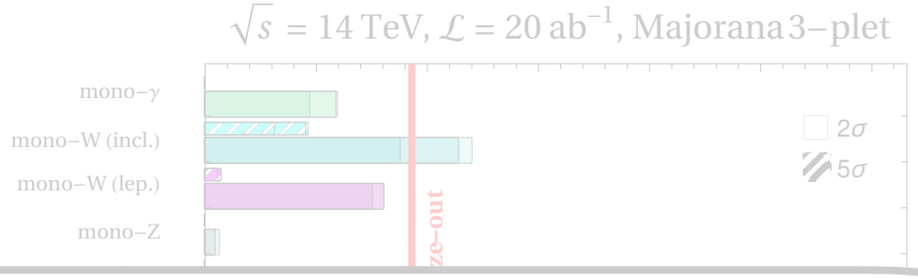

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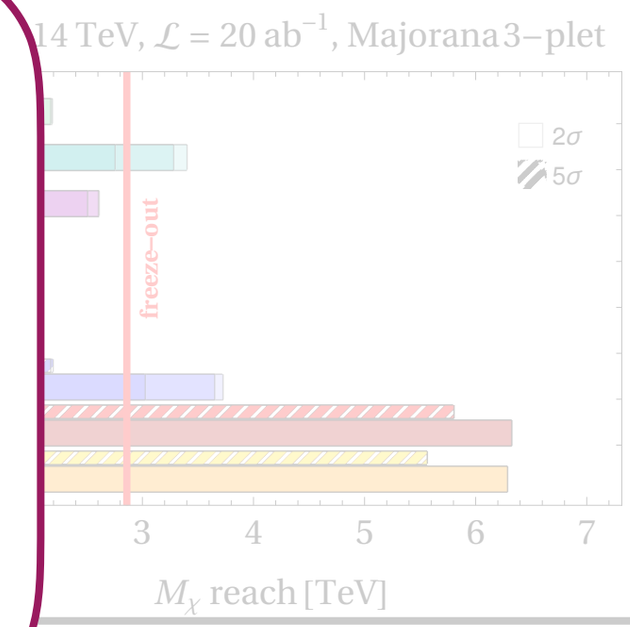
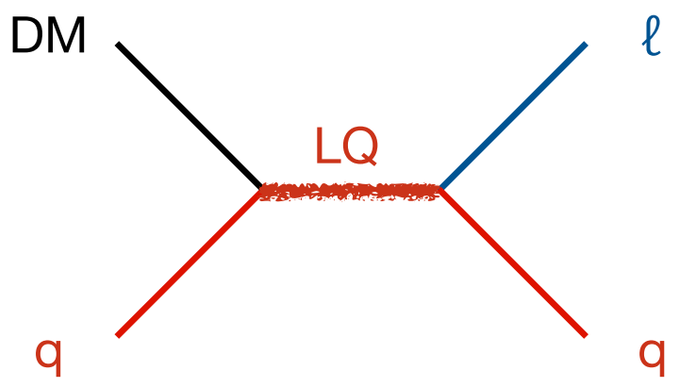


Leptoquarks: flavor physics + dark matter

leptoquarks as portal between SM and DM

flavored DM interactions



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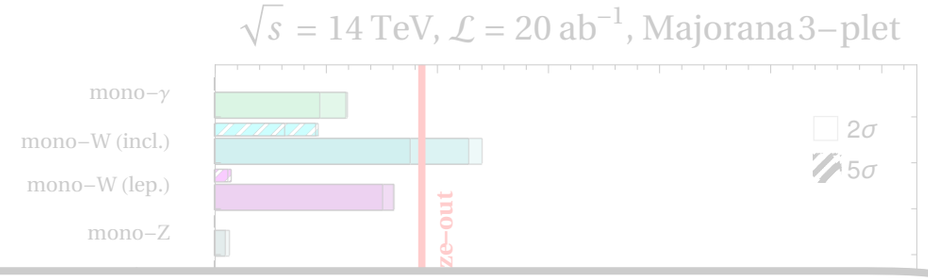

WIMP Dark Matter

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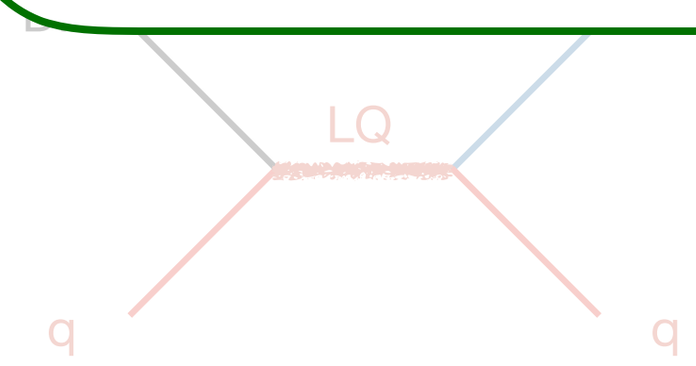

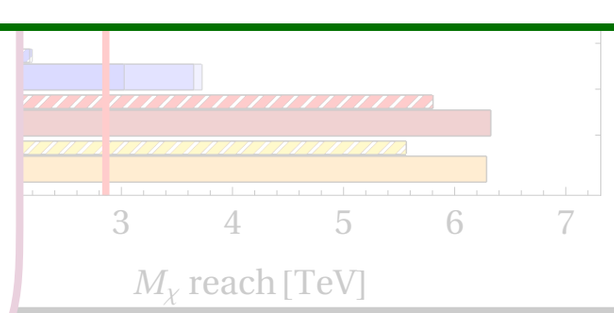

Axion-like particles

light new particles with flavor non-universal couplings

constraints from precision physics & invisible decays

(in progress)

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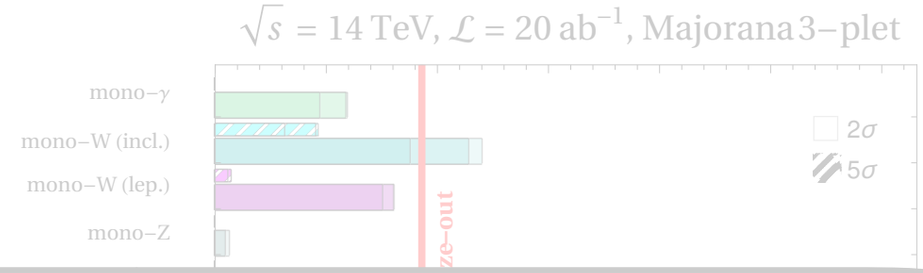

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Leptoquarks: flavor ph

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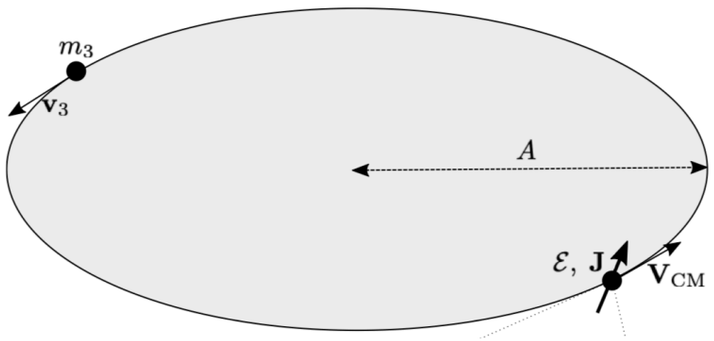
Black holes & GW

Effective field theories for rotating black holes

Relativistic compact mergers



Componenti dei gruppi di ricerca

Sezione di Pisa:

Membri permanenti: Dario Buttazzo (INFN, 90%), Paolo Panci (UniPi), Enrico Trincherini (SNS, 90%)

Postdoc: Adrien Kuntz (SNS), Ryoutaro Watanabe (INFN, 50%) ➠

➠ 3 nuovi in autunno: Florentin Jaffredo (AdR INFN) + 2 UniPi

Studenti PhD: Marco Costa (SNS), Andrea Luzio (SNS), Francesco Serra (SNS), Mohammad Aghaie (UniPi), Giovanni Armando (UniPi), Alessandro Dondarini (UniPi)

Salvatore Bottaro (SNS), Sonali Verma (SNS), Ludovico Vittorio (SNS) ➠









Sezione di Firenze: Michele Redi, Stefania De Curtis, Daniele Dominici, Giuliano Panico, Diego Redigolo, Andrea Tesi, Roberto Casalbuoni + 1 postdoc + 2 PhD

Sezione di Roma 1: Roberto Contino, Marco Nardecchia + 1 postdoc + 1 PhD

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	FTE	FTE (regola Becchi)
Oggi	13.3	10.8
Previsti in autunno	12.8	11.8

Richieste di finanziamento

Fondi per missioni: 2 k€ * 11.8 FTE = 23.6 k€

	FTE (regola Becchi)	Richieste	Assegnazioni
2021	**13**	25 k€	12.5 k€
2022	**9.8 (+1)**	21.5 k€	17 k€
2023	**10.8 (+1)**	23.6 k€	