

Hi there! I am **Marco Mancini**,
a 1° year PhD student at University
of Rome Tor Vergata and National
Laboratory of Frascati of INFN

PADME



TOR VERGATA
UNIVERSITÀ DEGLI STUDI DI ROMA



An year full of 'this is my first time...'

I joined PADME collaboration and began Master degree thesis

22-03-01

I published a paper:
L. Darmé, MM, E. Nardi, M. Raggi

[Phys. Rev. D 106, 115036](#)

22-09

I presented my work in a conference @ALPS2023 in Obergurgl

23-03-17

22-07-22

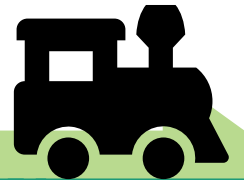
I completed my master degree in theoretical physics with a thesis entitled:
Hunting for X_{17} using resonant production at PADME

22-11-05

I began my PhD @LNF and University of Rome Tor Vergata

23-05-14

I had a school in physics!



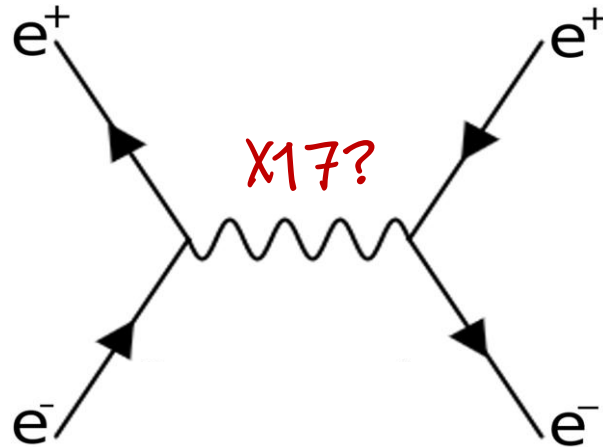
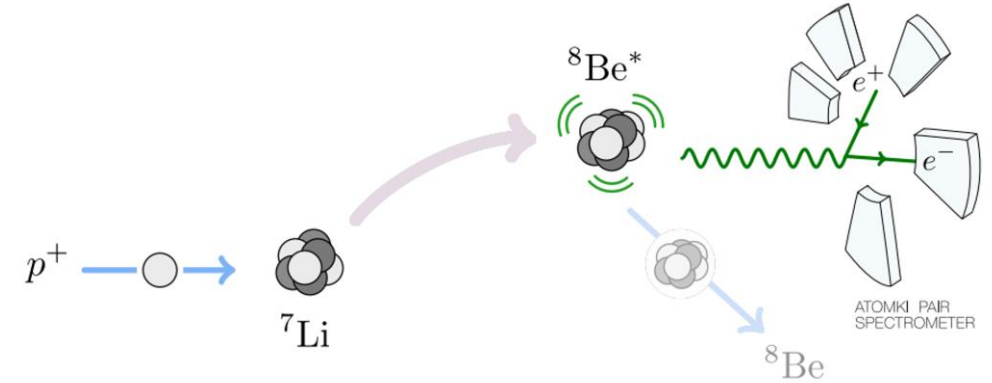
The X_{17} research

Resonant search for the X_{17} boson at PADME

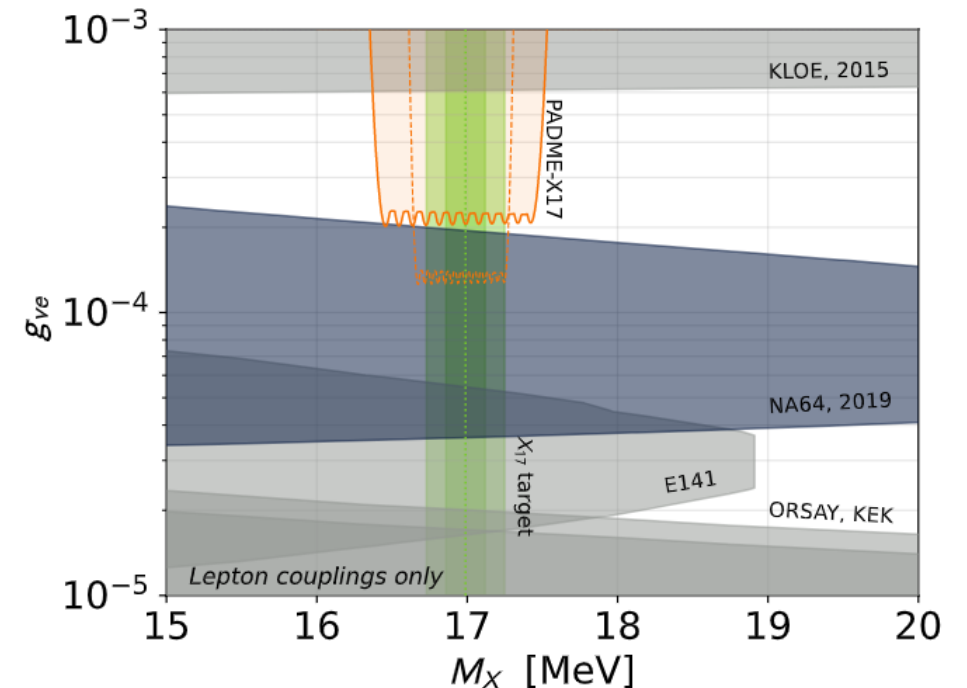
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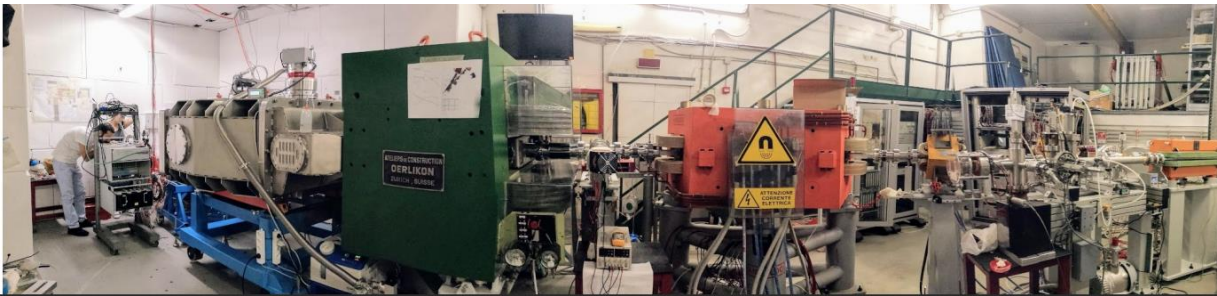
Luc Darmé,^{1,*} Marco Mancini,^{2,†} Enrico Nardi,^{3,‡} and Mauro Raggi^{4,§}

- Nuclear physics anomaly in e^+e^- pairs emitted by nuclear transition \rightarrow production of a new boson with $m \simeq 17$ MeV
- Feasibility studies
- Production, BG and sensitivity
- Data acquisition at the end of 2022
- Data analysis is ongoing \rightarrow Results in fall 2023, STAY TUNED!

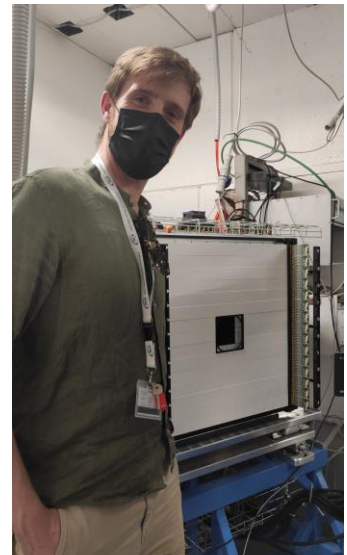
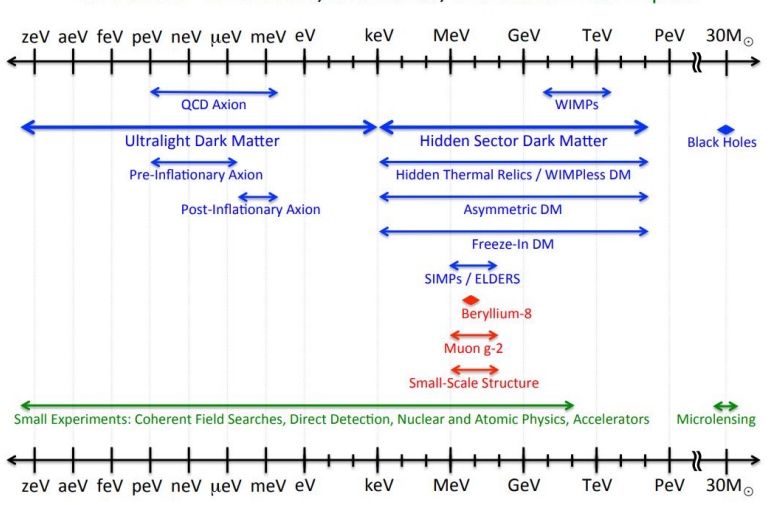


N_*	J_*^P	Scalar X_{17}	Pseudoscalar X_{17}	Vector X_{17}	Axial Vector X_{17}
$^8\text{Be}(18.15)$	1^+	\times	\checkmark	\checkmark	\checkmark
$^{12}\text{C}(17.23)$	1^-	\checkmark	\times	\checkmark	\checkmark
$^4\text{He}(21.01)$	0^-	\times	\checkmark	\times	\checkmark
$^4\text{He}(20.21)$	0^+	\checkmark	\times	\checkmark	\times





Dark Sector Candidates, Anomalies, and Search Techniques



Physics:

- Phenomenology of Dark Matter
 - Dark Photons and low energies candidates
- Astroparticles (not yet)
- ...

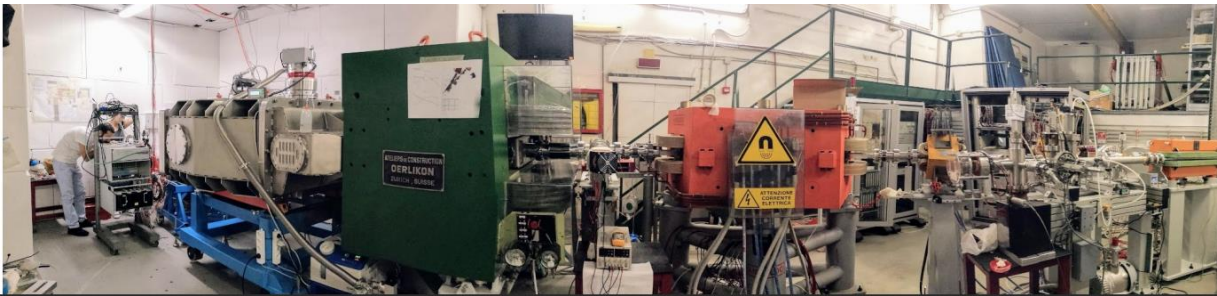
Hobbies:

- Basketball (c'mon celts!)
 - Playing, coaching, being a fan
- Football (just fan)

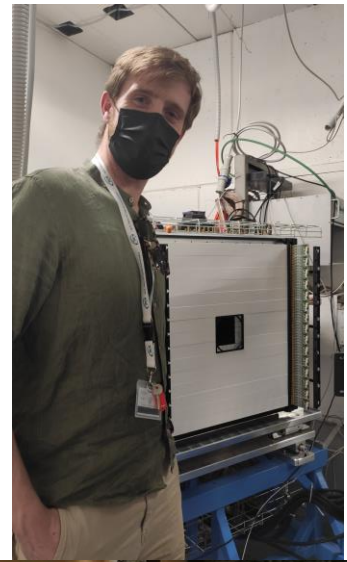
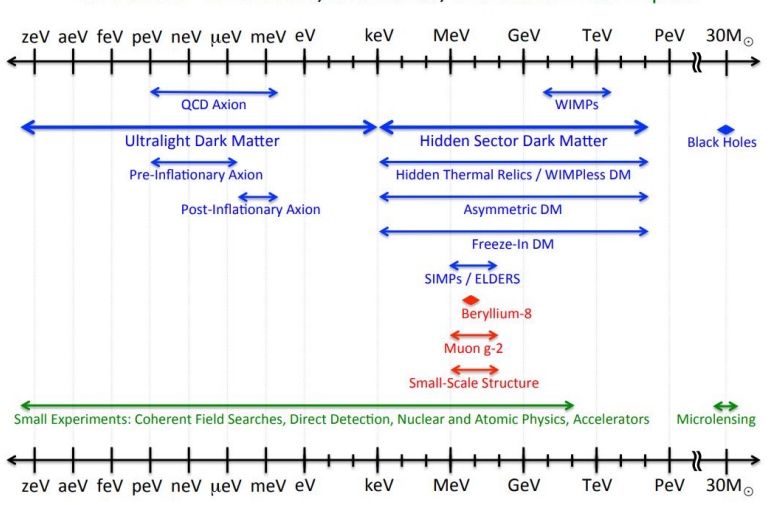
Other:

- Tutoring activity at university
- Planning trips that I will never take





Dark Sector Candidates, Anomalies, and Search Techniques



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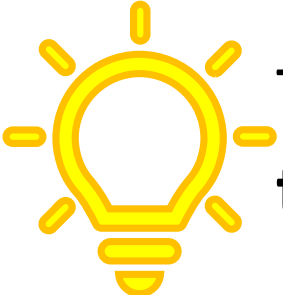
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Thank you and
turn the dark on!