

G3@Bo

G. Scioli

Attività di ricerca

Esperimenti presenti a Bologna

ALICE

EIC (dal 2019)

FAMU (dal 2015)

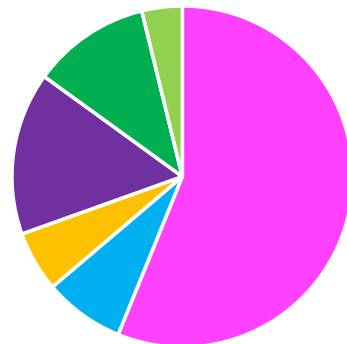
FOOT (dal 2018)

n_TOF

PANDORA (dal 2020)

NUCL-Ex fino al 2021

AEGIS (2012-2019)



■ ALICE ■ EIC_NET ■ FAMU ■ FOOT ■ n_TOF ■ PANDORA_GR3

Linee di ricerca della CSN3 (NuPECC)

1) Quark and Hadron Dynamics

2) Phase Transition of Nuclear and Hadronic Matter

3) Nuclear Structure and Reaction Dynamics

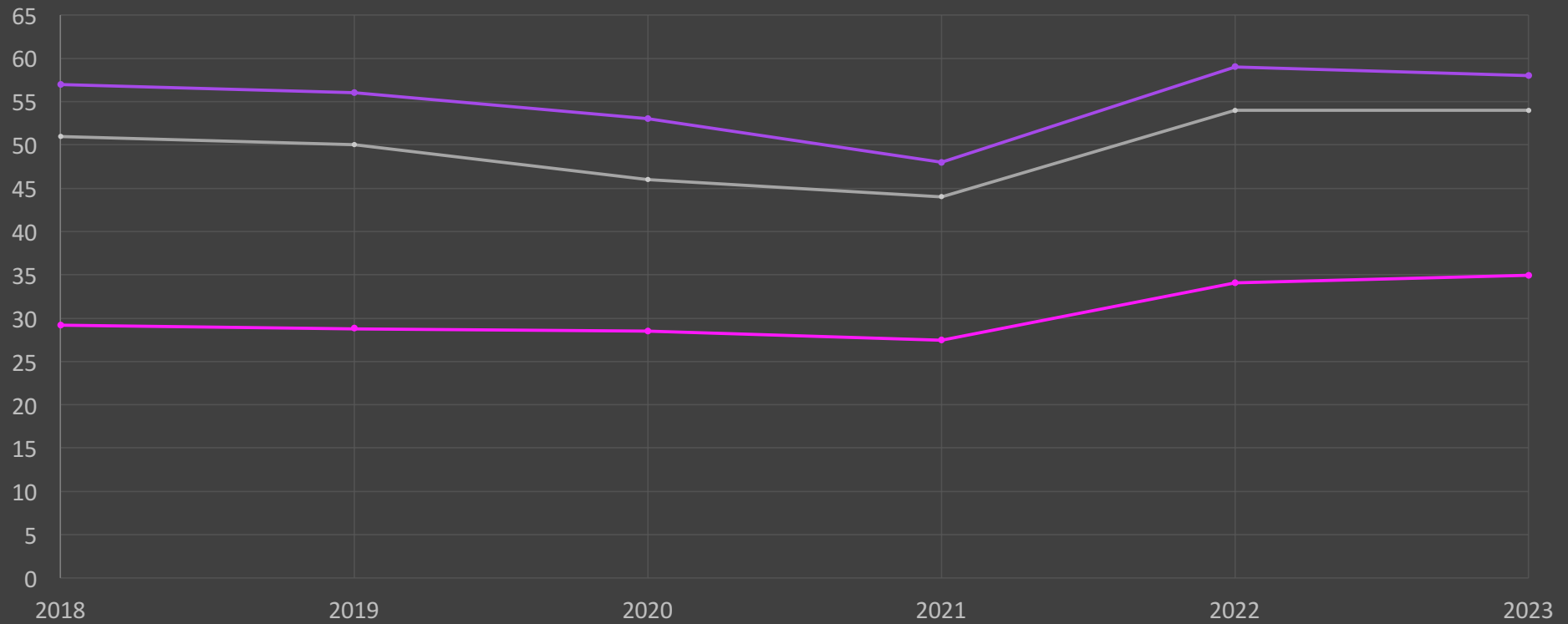
4) Nuclear Astrophysics and Interdisciplinary Researches

5) Symmetries and Fundamental Interactions

6) Applications and societal benefits

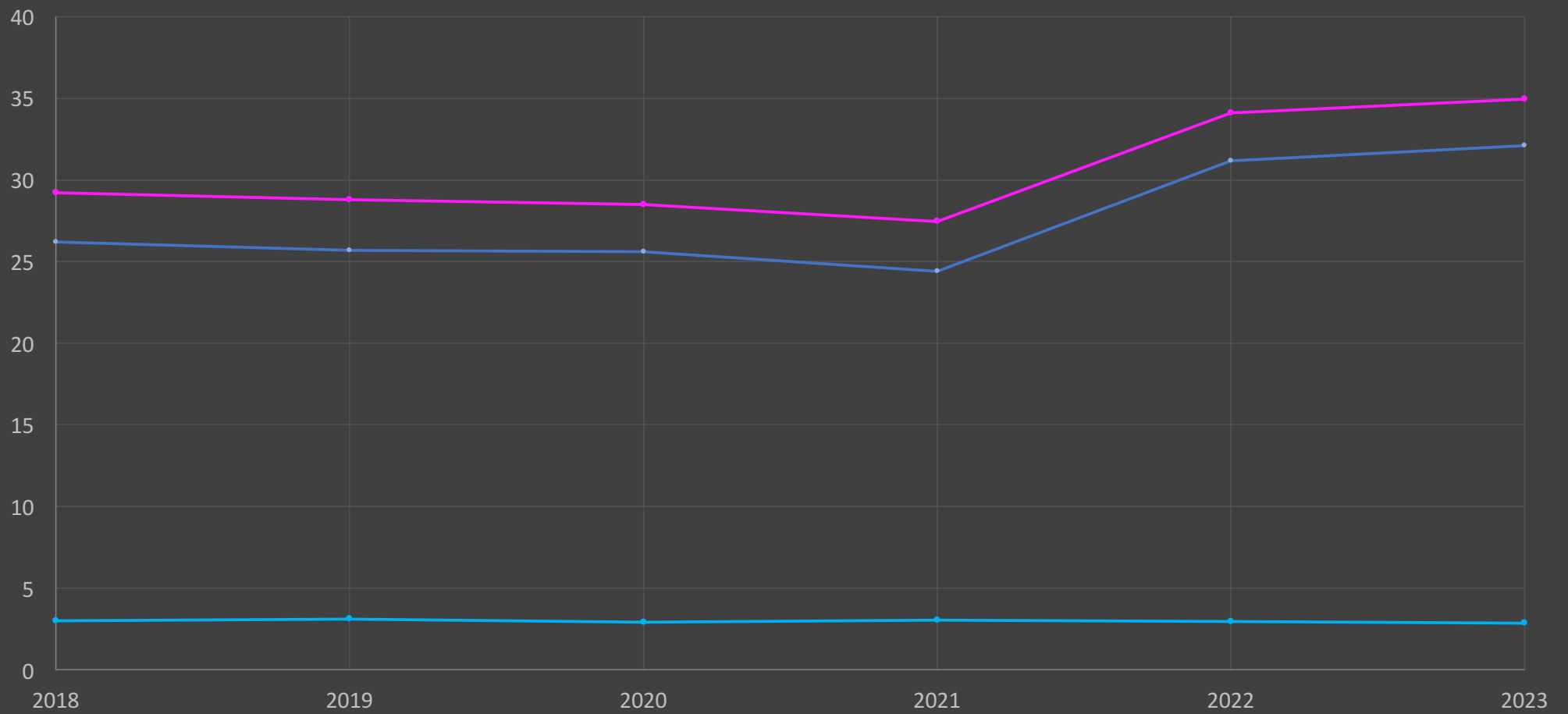
G3

FTE TOT PERSONE PERS-0%

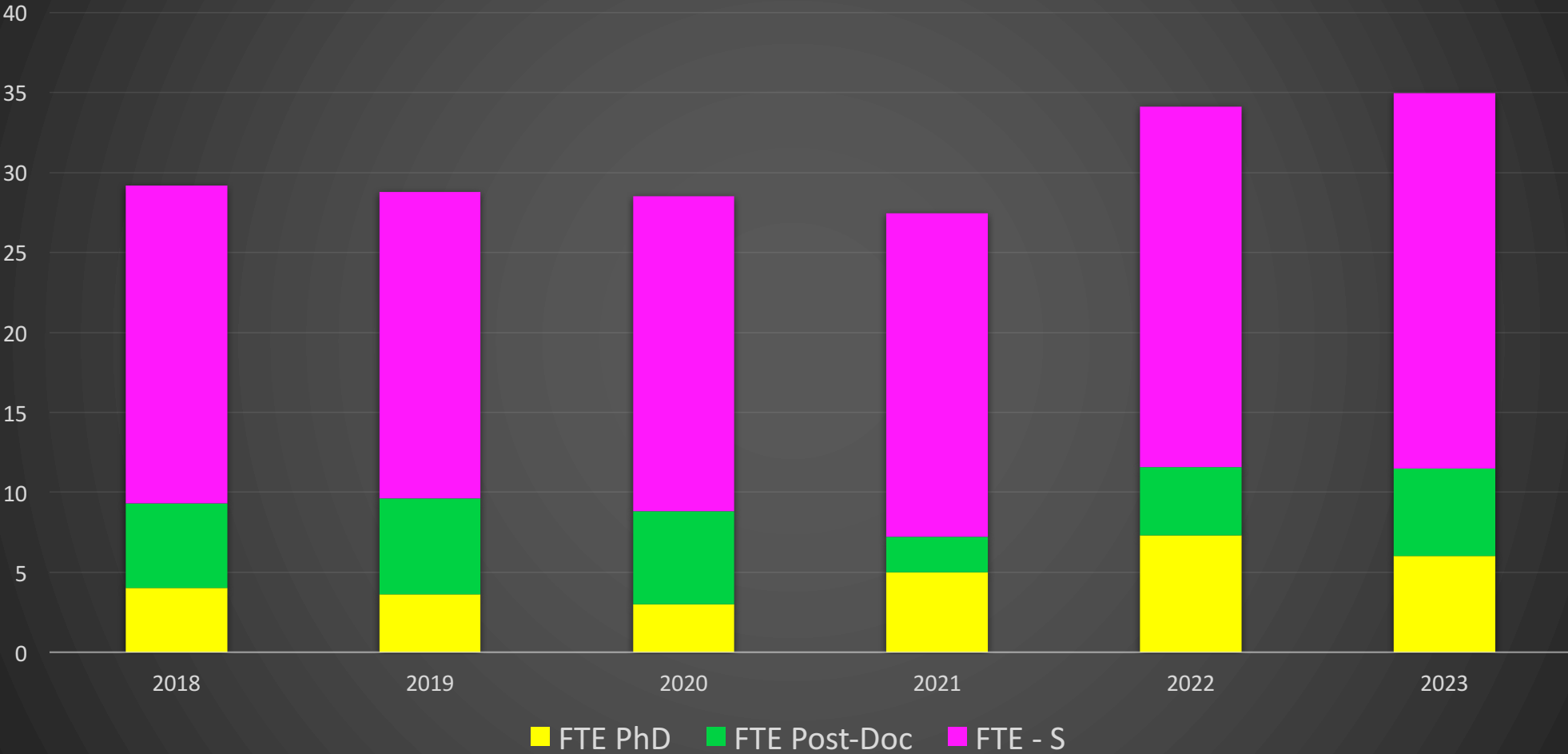


Composizione G3

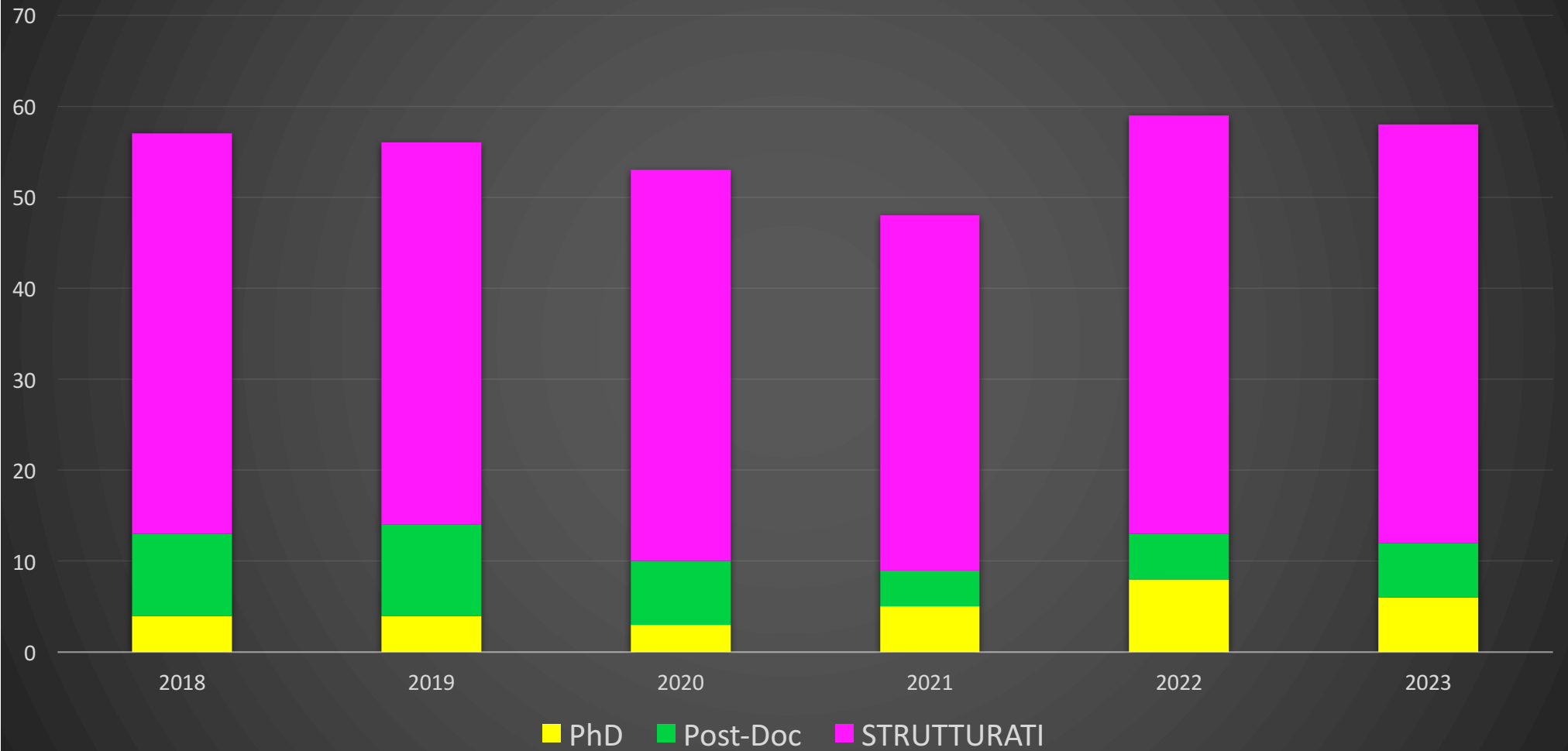
FTE-R FTE-T FTE TOT



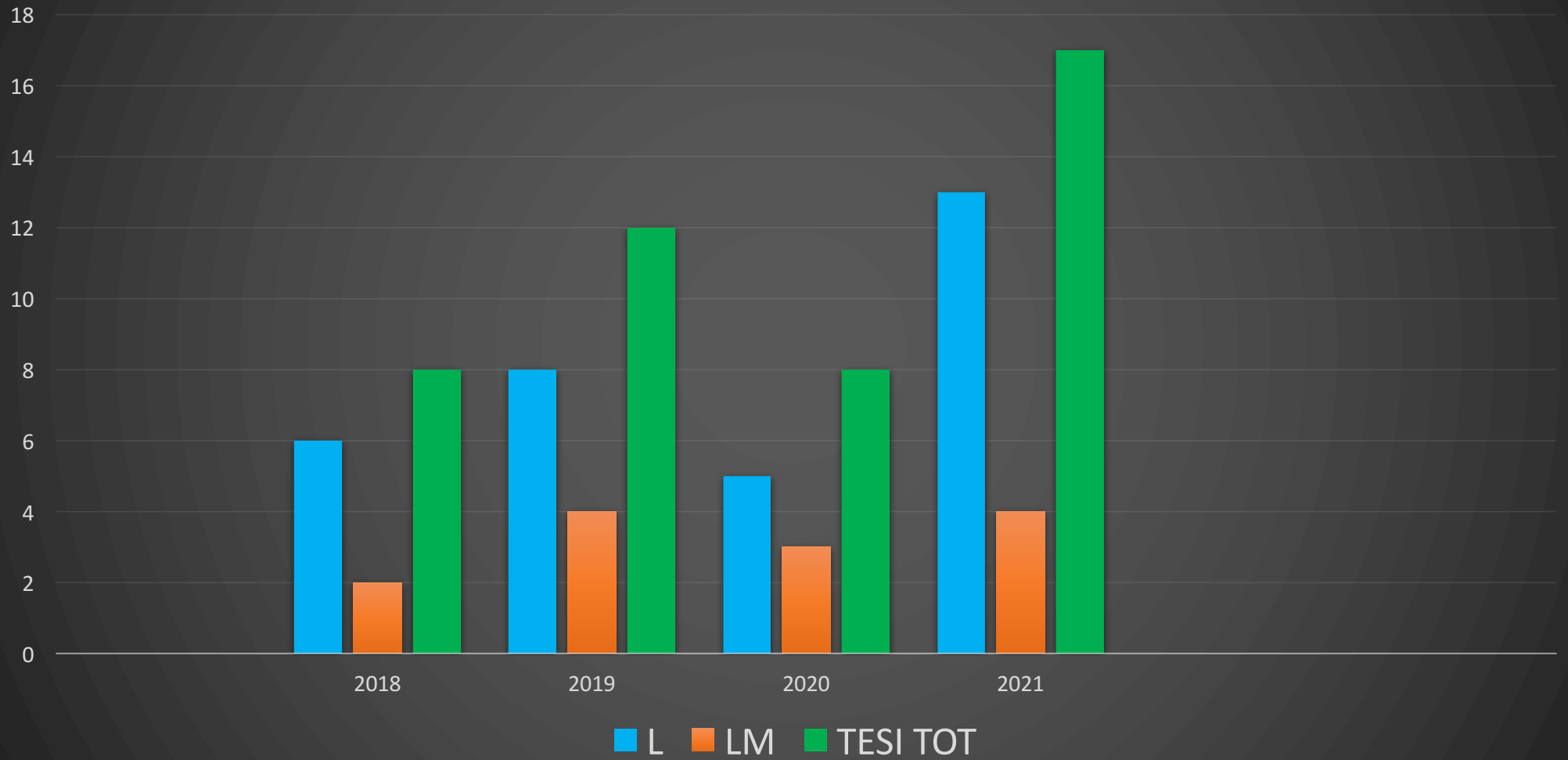
Giovani 1



Giovani 2



Giovanissimi



ALICE: N. Agrawal, **A. Alici**, P. Antonioli, S. Arcelli, F. Bellini, D. Cavazza, L. Cifarelli, F. Cindolo, G. Clai, M. Colocci, **F. Ercolessi**, D. Falchieri, **M. Giacalone**, M. Guerzoni, D. Hatzifotiadou, **N. Jacazio**, **G. Malfattore**, A. Margotti, R. Nania, F. Noferini, O. Pinazza, R. Preghenella, **R. Rath**, **N. Rubini**, E. Scapparone, G. Scioli, **S. Strazzi**, S. Tripathy, P. Veronesi, A. Zichichi.

PhD
New 2022

Attività e Richieste per il 2023

Lab. Elettronica	STG	Officina	Progettazione	Calcolo
8 MU	6 MU	2.5 MU	0	1 MU

Lab. Elettronica:

- Sviluppo prototipo scheda di read-out TRM2 con picoTDC, test di performance e progettazione schematico ORCAD
- Maintenance e sviluppo firmware schede di read-out ALICE –TOF

STG:

- Assistenza per misure di caratterizzazione e test in laboratorio su sensori al silicio veloci per progetto ALICE 3 (LGAD, SiPM) e sensori al silicio per tracciamento per progetto ITS 3 (MAPS)
- Supporto per misure ai test beam

Officina:

- Operazioni di manutenzione hardware su rivelatore TOF (sostituzione cooling pipes danneggiate e operazioni di declogging su crate con problemi di raffreddamento)
- Supporto per realizzazione di strutture per le misure in laboratorio e ai test beam

Calcolo:

- Assistenza remota e in loco per cluster ALICE-TOF al CERN (servers HP OS CERN CentOS 7)

EIC_NET in 2023: 12 people, 2.8 FTE

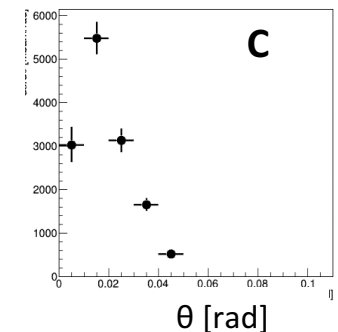
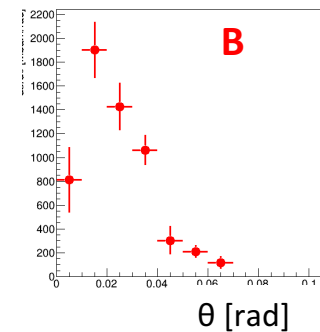
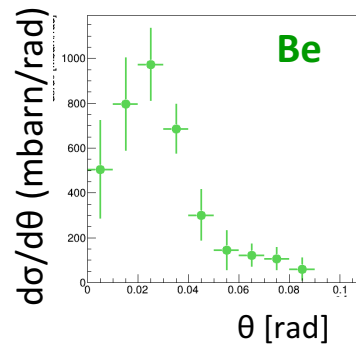
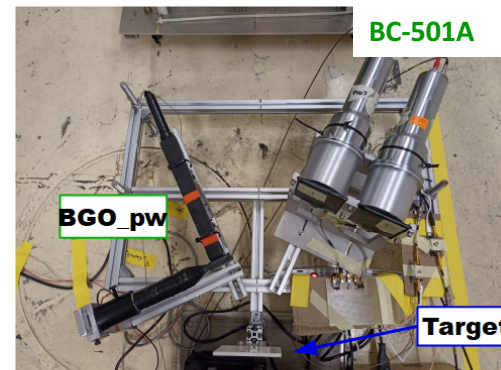
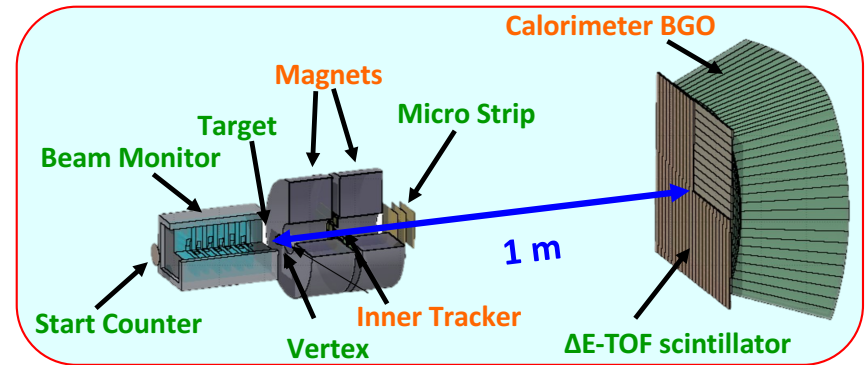
Antonioli ← RN
Preghenella ← RL

- **continuation of R&D on SiPM for EIC dual-radiator RICH**
 - extend proton irradiation campaign with neutrons
 - look into effects due to high-energy x-rays / gamma
 - explore new techniques for online recovery from radiation damage (annealing)
 - test new concepts for radiation-harder SiPM in an engineering run with FBK
- **design and production of full prototype of SiPM readout unit**
 - 256-channel 3x3mm² pixel SiPM-based low-temperature cooled camera
 - special attention to high-density arrangement of sensors and tiling
 - in view of construction of extended photosensor readout plane for the dRICH prototype

Servizio Elettronica	4 MU
Servizio Tecnico Generale	3 MU
Servizio Progettazione Meccanica	2 MU
Servizio Officina Meccanica	2 MU

FOOT: plans for 2023

- Data taking campaigns:
 - GSI (high and low energy)
 - CNAO
- Development of neutron detectors
 - Liquid Scintillators BC-501A
 - Crystal BGO phoswitch
 - Plastic scintillator (RIPTIDE)
- Data Analysis
 - Already acquired $> 50 \times 10^6$ events
 - Double differential production cross section
- Data Acquisition System
 - System completion
- Service Requests:
 - Electronic: 2 MU
 - STG: 1 MU
 - CCL: 1 MU
 - OFFICINA: 2 MU



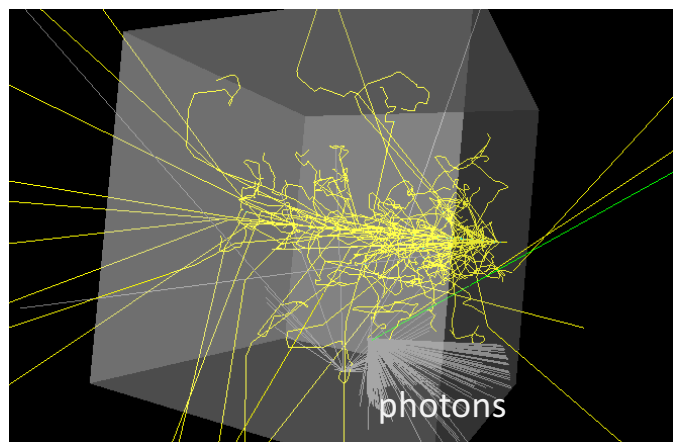
RIPTIDE: a novel recoil-proton track imaging detector for fast neutrons

A. Musumarra^{1,2}, F. Leone^{1,2}, C. Massimi^{5,3,4}, M.G. Pellegriti², F. Romano², R. Spighi⁴ and M. Villa^{3,4}

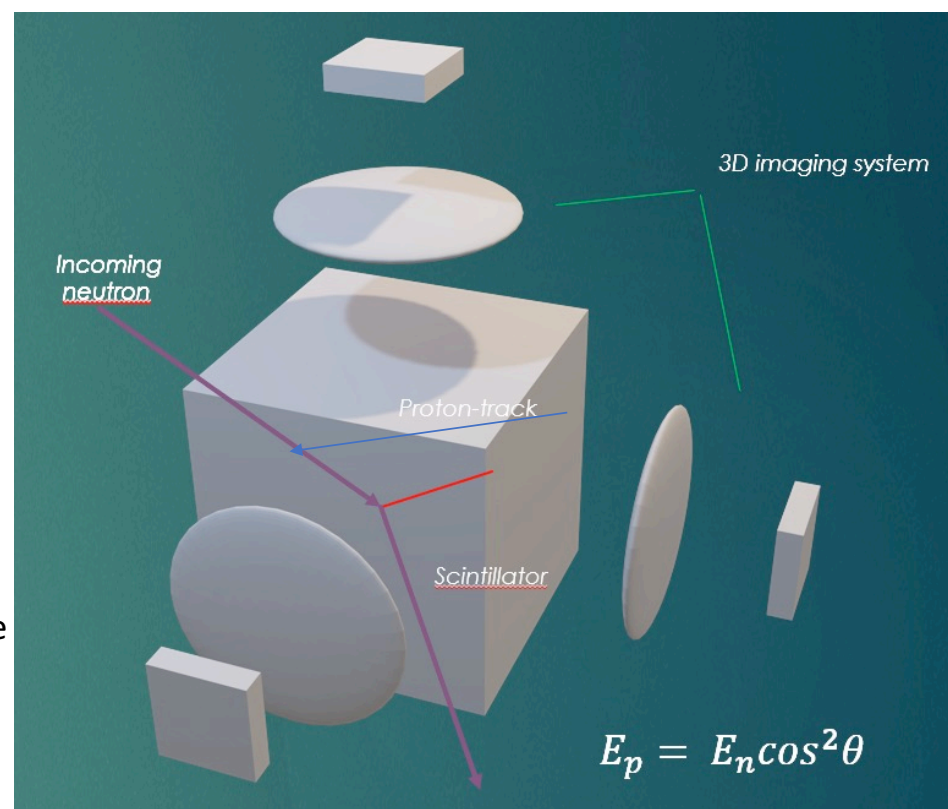
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[Journal of Instrumentation](#), Volume 16, December 2021

Citation A. Musumarra *et al* 2021 *JINST* 16 C12013



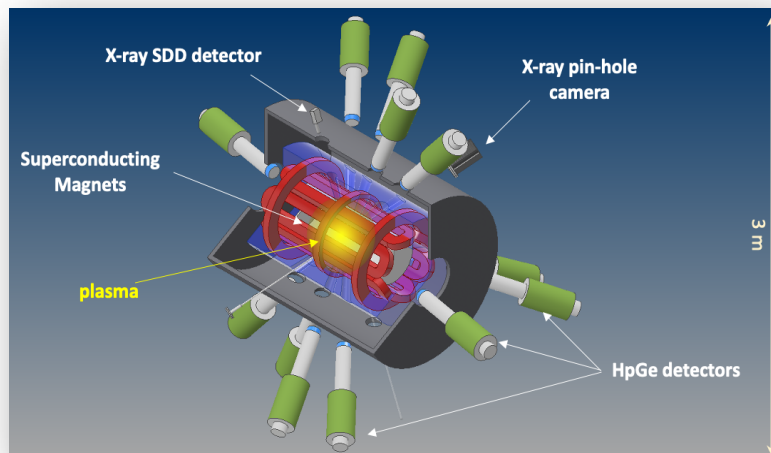
Richieste per disegnare e realizzare una piccola camera di scattering (progettazione e officina meccanica) e realizzare delle schede di distribuzione del segnale (elettronica) e simulazioni MC (risorse di calcolo tramite la CSN3 al CNAF per n_TOF) assistenza informatica.



The PANDORA experiment

measuring nuclear β -decay lifetimes in magnetized plasmas

- ➔ A new approach to measure, for the first time, nuclear β -decay lifetimes in a plasma, under a high degree of ionization and in a hot and dense environment, simulating stellar-like conditions.
- ➔ a new “ECR Ion Trap” @ LNS is under construction



INFN Sezione di Bologna – Assemblea - 14 Luglio 2022

The Collaboration: LNS, LNL, PG, TIFPA, BO

Bologna activities:

Personnel (4 researchers, 1.4 FTE): M. Cuffiani (0.2 FTE), L. Malferrari (0.5 FTE), A. Mengoni (0.2 FTE), F. Odorici (0.5 FTE) local resp.

Official Responsibilities in PANDORA:

- Theory and Models
(«physics cases approver»)
- Inner Plasma Chamber
(design, construction & control)
- Auxiliary e-gun
(design, construction & control)

Services requests (2023):

- Mechanical design: 1 month
- Mechanical workshop: 1 month