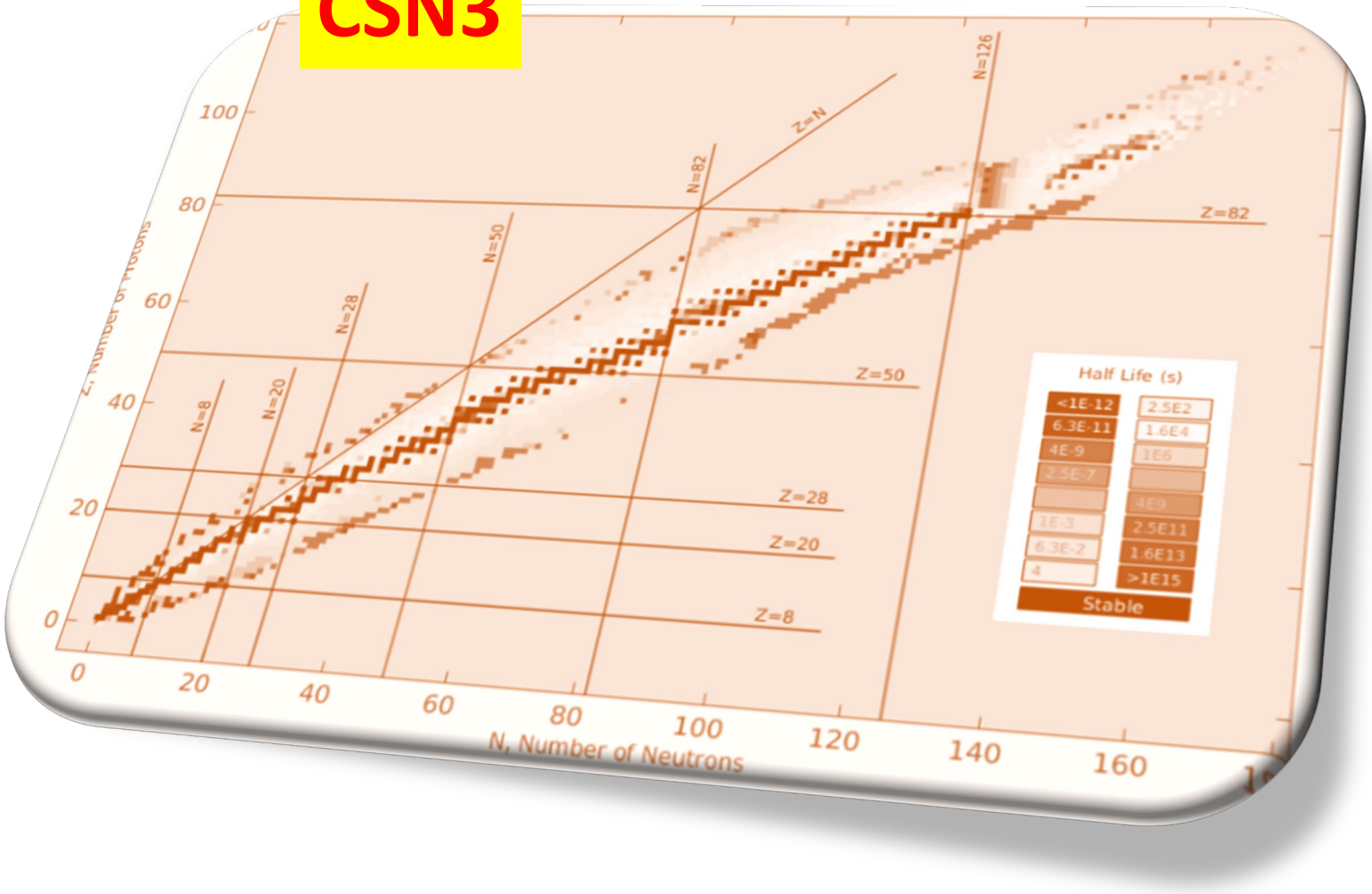
R. Nania

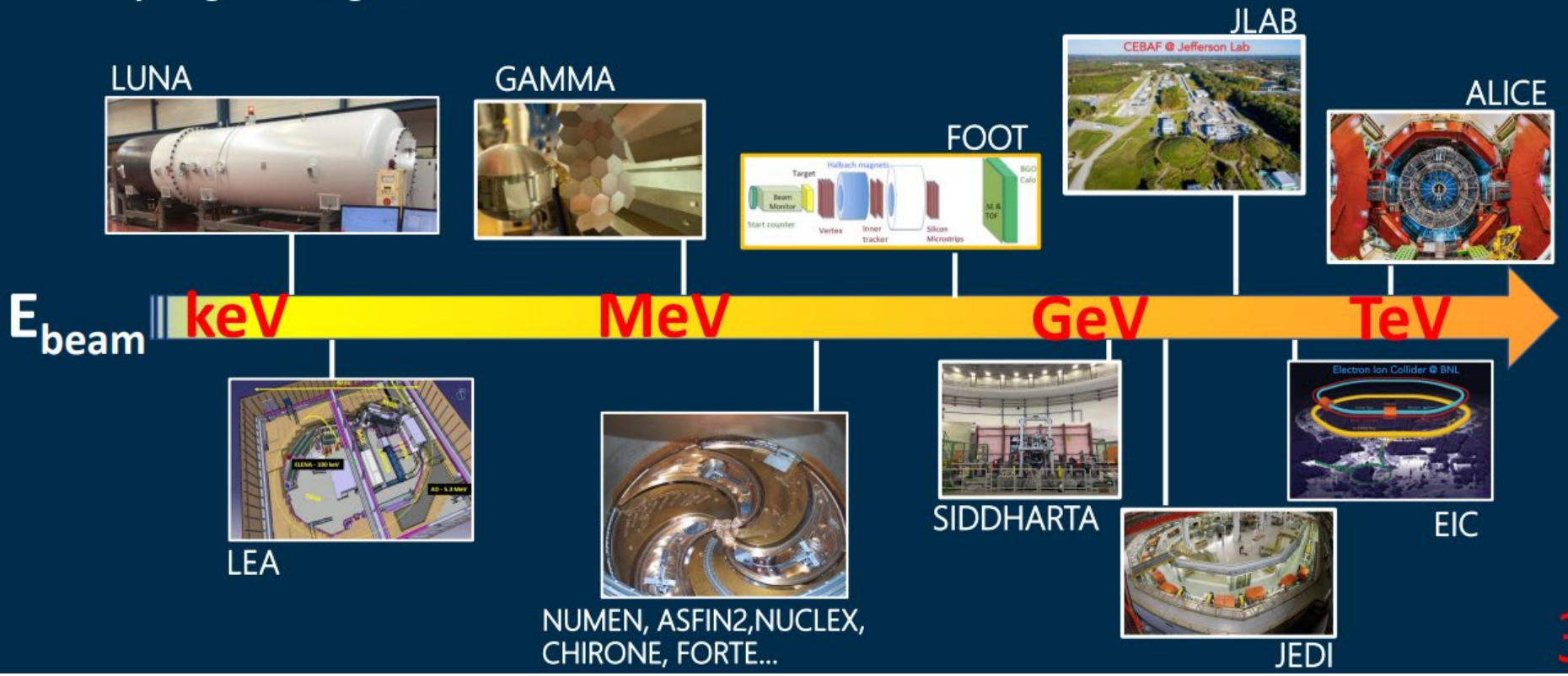
Nuclear Physics Mid Term plan in Italy

CSN3



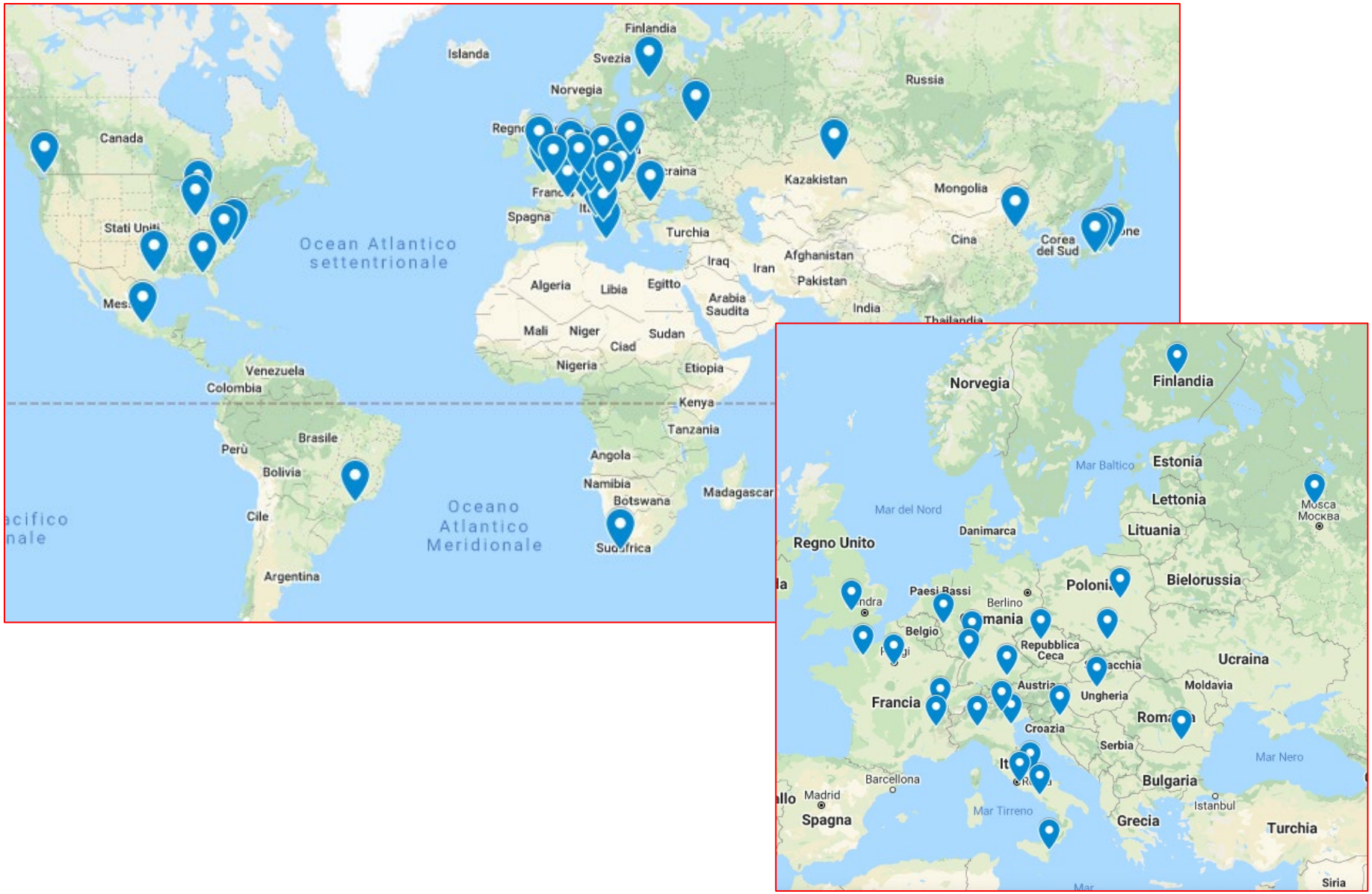
The CSN3 experiments

CSN3 experiments use different type of beams (stable or radioactive), from low to very high energies



R. Arnaldi

National and International Laboratories for CSN3 experiments



INFN CSN3

CSN3 Fisica Nucleare

CSN3 Research Lines 2022 Following NUPECC indications

1

QUARKS AND HADRON DYNAMICS

KAONNIS (LNF) , JLAB12 (JLAB), MAMBO (Mainz-Bonn), ULYSSES (JPARC), EIC_NET (BNL)

2

PHASE TRANSITION IN HADRONIC MATTER

ALICE (CERN) , NA60_PLUS(CERN)

3

NUCLEAR STRUCTURE AND REACTION MECHANISM

FORTE, GAMMA, CHIRONE, NUCL-EX, NUMEN_GR3, PRISMA_FIDES (LNS, LNL, GANIL, ISOLDE, GSI, RIKEN,….)

4

NUCLEAR ASTROPHYSICS

ASFIN, ERNA, LUNA , n_TOF, PANDORA (LNS, LNL, LNGS, CIRCE , CERN…)

5

FUNDAMENTAL INTERACTIONS

LEA (CERN), JEDI (Jülich),VIP (LNGS), FAMU (RAL)

6

APPLICATIONS AND SOCIETAL BENEFITS

FOOT (GSI,CNAO,TIFPA, HIT)

INFN CSN3

CSN3 Fisica Nucleare

QUARKS AND HADRON DYNAMICS 1

KAONNIS (LNF) , JLAB12 (JLAB), MAMBO (Mainz-Bonn), ULYSSES (JPARC), EIC_NET (BNL)

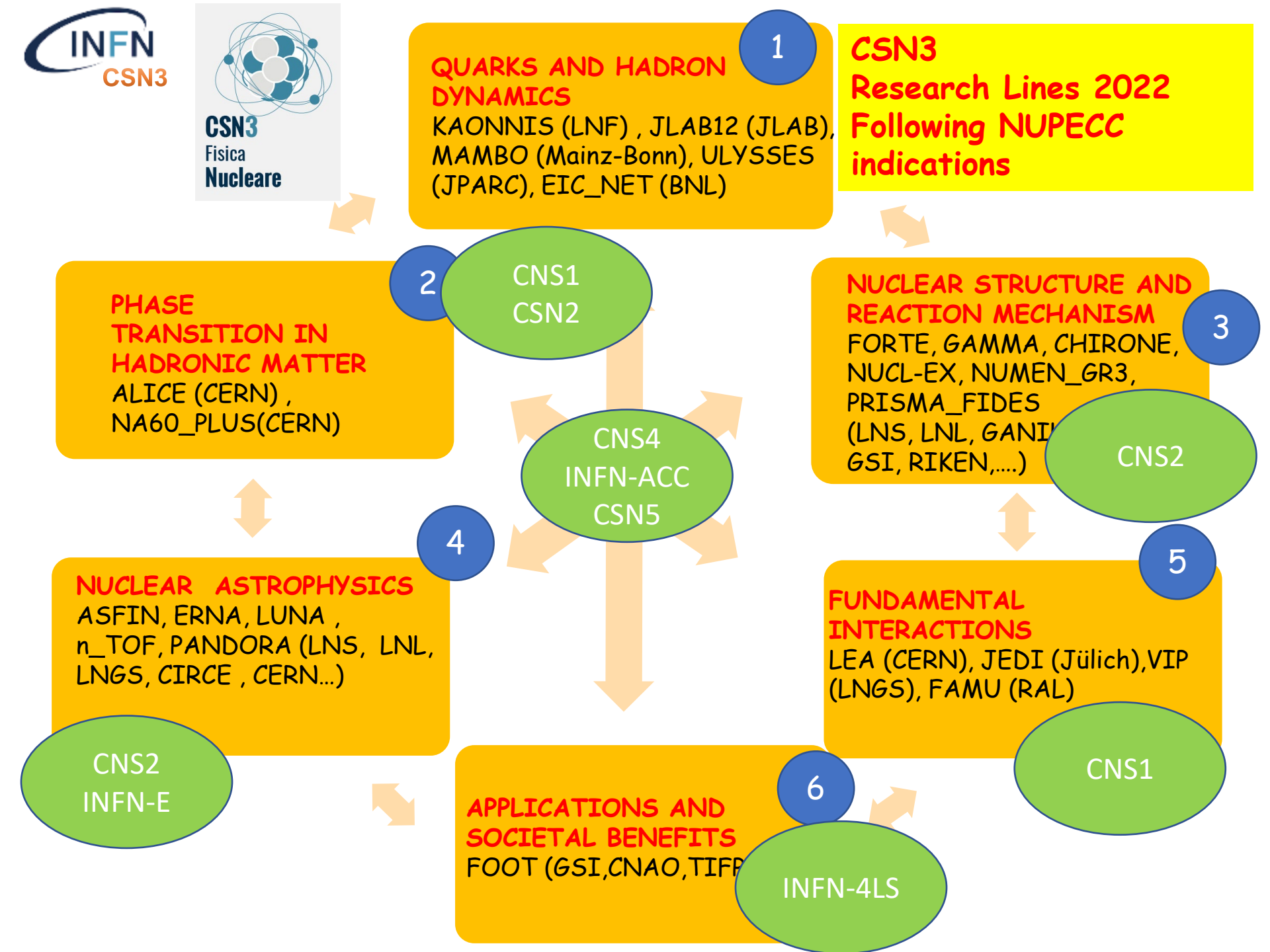
CSN3 Research Lines 2022 Following NUPECC indications

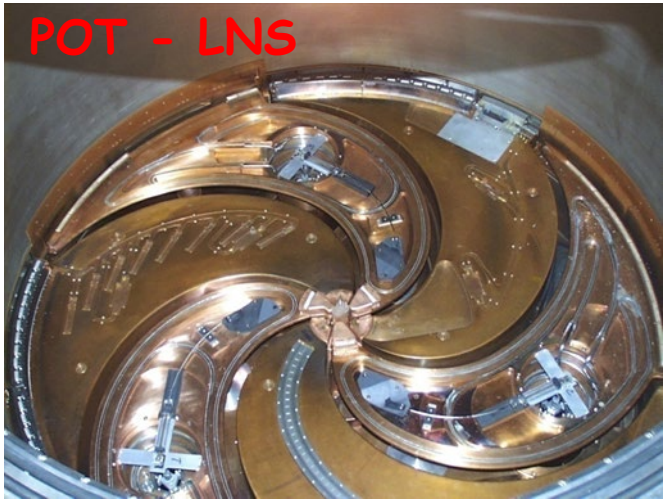
Sito CSN3
https://web.infn.it/csn3/index.php/it/

GIANTS Newsletter
https://pandora.infn.it/public/giantsnews

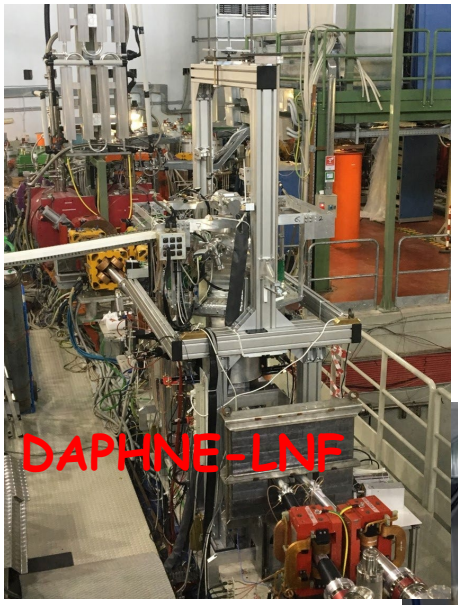
Experimental nuclear astrophysics in Italy
https://doi.org/10.1393/ncr/i2019-10157-1

Trends in particle and nuclei identification techniques in nuclear physics experiments
https://link.springer.com/article/10.1007/s40766-021-00028-5
With many young researchers as authors.


INFN
CSN3
CSN3
Fisica
Nucleare
CSN3
Research Lines 2022
Following NUPECC
indications
1
QUARKS AND HADRON DYNAMICS
KAONNIS (LNF) , JLAB12 (JLAB), MAMBO (Mainz-Bonn), ULYSSES (JPARC), EIC_NET (BNL)
2
PHASE TRANSITION IN HADRONIC MATTER
ALICE (CERN) , NA60_PLUS(CERN)
CNS1
CSN2
3
NUCLEAR STRUCTURE AND REACTION MECHANISM
FORTE, GAMMA, CHIRONE, NUCL-EX, NUMEN_GR3, PRISMA_FIDES
(LNS, LNL, GANI
GSI, RIKEN,....)
CNS2
CNS4
INFN-ACC
CSN5
4
NUCLEAR ASTROPHYSICS
ASFIN, ERNA, LUNA , n_TOF, PANDORA (LNS, LNL, LNGS, CIRCE , CERN...)
CNS2
INFN-E
5
FUNDAMENTAL INTERACTIONS
LEA (CERN), JEDI (Jülich),VIP (LNGS), FAMU (RAL)
CNS1
6
APPLICATIONS AND SOCIETAL BENEFITS
FOOT (GSI,CNAO,TIFP
INFN-4LS



In the next years new perspectives for INFN laboratories, machine and physics



It is the proper time to better focus the highlights of such experimentation in a unified effort from all the experimenters and theoretichians involved.

INFN CSN3

2022 series of workshops
Nuclear Physics Mid Term Plan
Physics, Theory, Machines
https://web.infn.it/nucphys-plan-italy/

Final reports to be published in EPJ-FOCUS

INFN

About Poster Organizing Co REGISTER

INFN is promoting a discussion forum on the future of nuclear physics research in Italy with particular emphasis on INFN laboratories that are preparing important upgrades for the accelerators complexes.

Specific working groups are discussing ideas and topics to be developed in the mid term future with the goal of defining experiments at the upgraded facilities or promoting ad-hoc developments for new setups.

Worldwide researchers interested in joining the working groups are welcome to register and participate to the ongoing discussions as active members of the community.

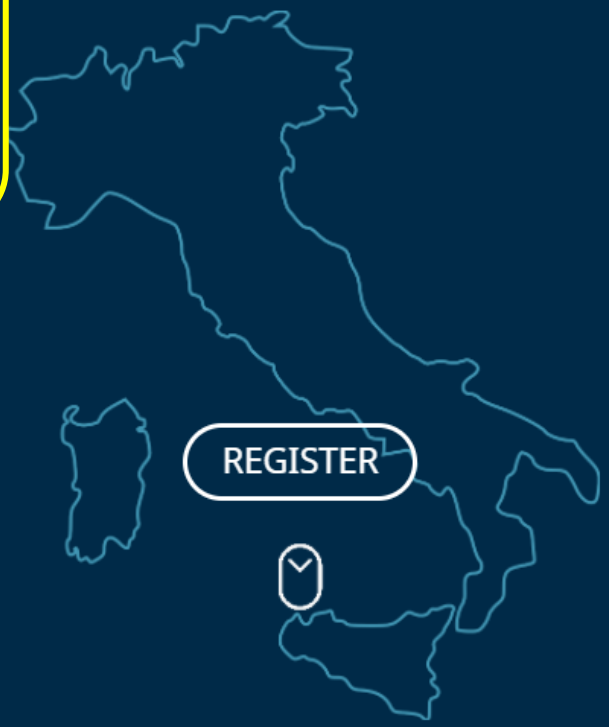
The working groups will report their activities in three final events, dedicated to each Laboratory:

Session 1 – LNS (4-5 April 2022)

Session 2 – LNL (11-12 April 2022)

Session 3 – LNGS/LNF (date to be announced)

UPDATE: Attendees registration is now open! You can find the form in each INDICO page.



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Nuclear Physics
Mid Term Plan in Italy


Laboratori Nazionali di Legnaro


Laboratori Nazionali del Sud


Laboratori Nazionali del Gran Sasso


Laboratori Nazionali di Frascati

LNL 11-12 April 2022

Working group (Chair)	Topic	Speaker
Nuclear Astrophysics (R. Depalo)	Nucleosynthesis up to the iron peak Nucleosynthesis of trans-iron elements Nuclear astrophysics theory	A. Caciolli T. Kurtukian Nieto S. Cristallo
Nuclear Structure (D. Mengoni)	Shell evolution Light to medium-mass exotic nuclei N~Z nuclei and isospin symmetry Deformation and collective states	A. Gottardo S. Bottoni S. M. Lenzi F. C. Crespi
Nuclear Reactions and Dynamics (T. Marchi)	Physics overview: alpha clustering, dynamics and structure, termodynamics, equation of state, collective motions Mechanisms/Tools: fusion-evaporation and pre-equilibrium emission Mechanisms/Tools: transfer, particle spectroscopy Mechanisms/Tools: fission and sub-barrier fusion	F. Gulminelli & D. Dell'Aquila K. Mazurek & M. Cicerchia L. Gasques & F. Galtarossa M. Caamaño-Fresco & I. Zanon
Applications (G. Pupillo)	Nuclear cross sections measurements and modelling for direct radionuclide production and neutron beam lines at SPES ISOL and laser applications at the SPES facility Development, characterization and modifications of materials for applied nuclear physics	L. Mou M. Ballan M.Campostrini

Many thanks to the Conveners and participants for their work and engagment in the past months and their efforts to prepare a unitary report of the main highlights of the discussions and their time profile.

A special thank to Marco La Cognata and Jose Javier Valiente Dobon for the general coordination of the events

Many thanks to the Director and all those who contributed to the organizzation