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Padua Univ. and INFN

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- 4 national LABS: one of them mainly dedicated to Neutrino&DM experiments (Gran Sasso Laboratory)

INFN Istituto Nazionale di Fisica Nucleare

@ inVisibles neutrinos, dark matter & dark energy physics

3 "SUB-NODES"

PADOVA@inVisibles

- PHENO-COSMO = Feruglio, Passera, Pietroni, Rigolin
- EXP-Neutrino = Bettini, Mezzetto;

TRIESTE@inVisibles

- PHENO-DM = Petcov, Romanino, Ullio (SISSA) Senjanovic, Smirnov (ICTP);

MILANO-BICOCCA@inVisibles

- EXP-Neutrino = Brofferio, Capelli, Cremonesi, Pavan;

Padova INFN node overview:

- Around 50 INFN researchers active in high-energy particle and nuclear physics (both exp. and th.);
- Deeply integrated with the Department of Physics "Galileo Galilei" (around 100 active members):
  - ✓ Undergraduate diplomas in physics, material science and optics: around 200 students/y;
  - ✓ Master diploma in physics: around 80 students/y
  - ✓ PhD in Physics: around 15 students/y
- Highly connected with the Legnaro INFN national laboratory (research interests from nuclear and medical physics to experimental particle physics).

PD-INFN research/training contributions to ITN

Neutrino Experiments:

- Participation to T2K - Measure of ϑ_{13} and δ_{CP}
  M. Mezzetto (and his group)
- Connection with other experimental groups present in Padova (Opera, Icarus, Gerda, Luna...)

Neutrino Phenomenology:

- ν's Parameters - Measure of ν's properties: angles, phases, cross-sections (Mezzetto, Passera, Rigolin);
- Origin of masses and mixings - Study of possible neutrino textures (Feruglio, Hagedorn);

PD-INFN research/training contributions to ITN

DM&DE:

- Theoretical models of DM-DE: SUSY&DM, DM&DE interactions, quintessence (Masiero, Pietroni, Rigolin)
- Cosmo Perturbations (Bartolo, Ballesteros, Matarrese)
- Connection w exp. cosmo groups like Fermi, Magic;

SM&BSM Phenomenology:

- Precision Physics: SM, MSSM, Z', Higgs, LHC related pheno (Mastrolia, Passera, Zwirner, Wulzer);
- Flavour Physics BSM: MSSM, MFV, Extra Dimensions (Feruglio, Hagedorn, Masiero, Rigolin);

INFN-PD

Trieste INFN node overview:

- Around 25 INFN researchers active in (astro)-particle and nuclear physics (both exp. and th.);
- Deeply integrated with the Department of Physics, SISSA and ITCP (around 100 active members):
  - ✓ Undergraduate and master diplomas in physics (Trieste University);
  - ✓ Masters and PhD in Physics (various areas) at SISSA: around 20 students/y for High Energy-Astroparticle (admission exams in July!);
  - ✓ Joined PhD and Postdocs activities with ICTP;

INFN-TS research/training contributions to ITN

Neutrino Phenomenology:

- Origin of ν's masses and mixings - Neutrino mass character, leptonic CP-violation, lepton number violation and leptogenesis (Petcov, Romanino, Senjanovic, Smirnov, Hernandez, Spinrath)

DM&DE:

- DM searches - Interpretation of DM experiments, N-body simulation of DM halo, connection with LHC searches (Huang, Ullio) - See Maryam Tavakoli talk

SM&BSM Phenomenology:

- Flavour Physics BSM (Hernandez, Romanino, Serone)

Milano Bicocca INFN node overview:

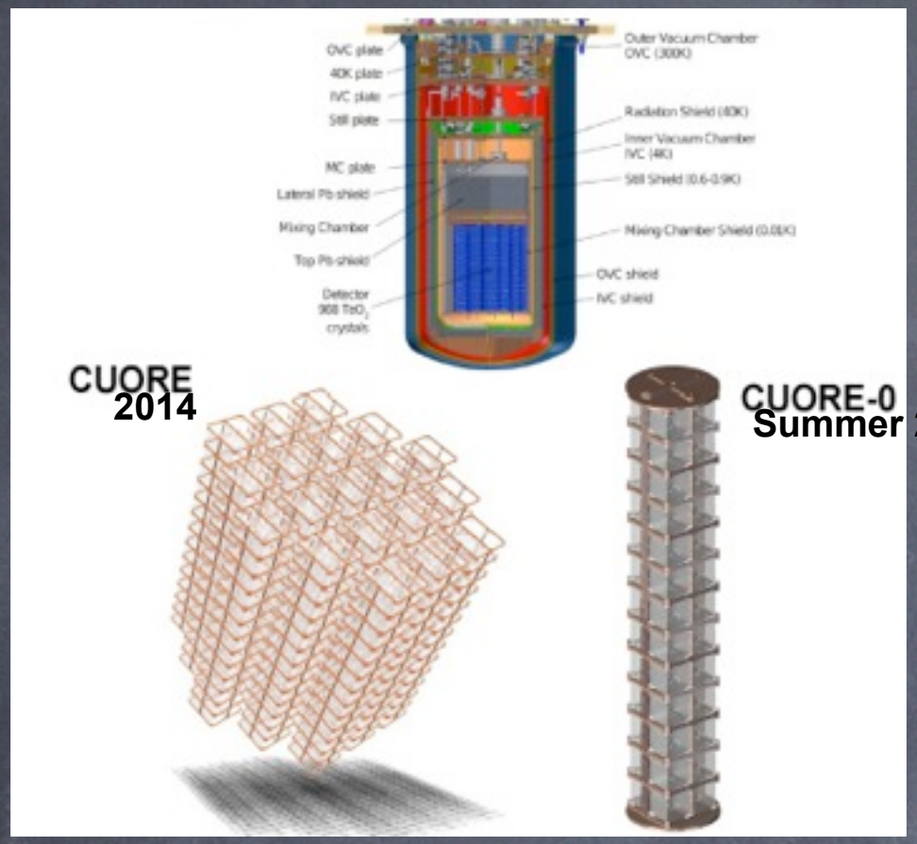
- Around 20 INFN researchers active in (astro)-particle and nuclear physics (both exp. and th.);
- Deeply integrated with the Department of Physics of Milano Bicocca University
- Highly connected with the Gran Sasso INFN national laboratory: underground neutrino physics;

INFN-MIB research/training contributions to ITN

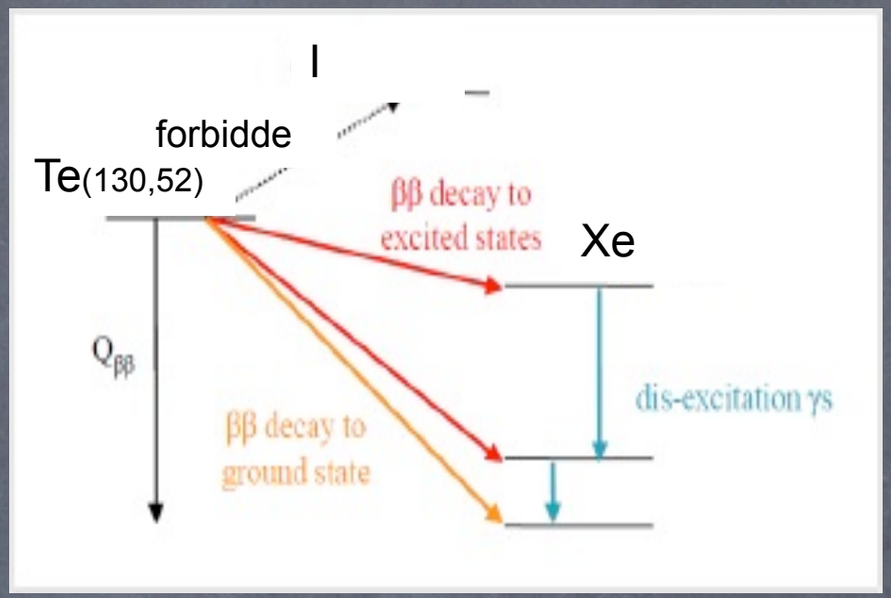
Neutrino Experiments:

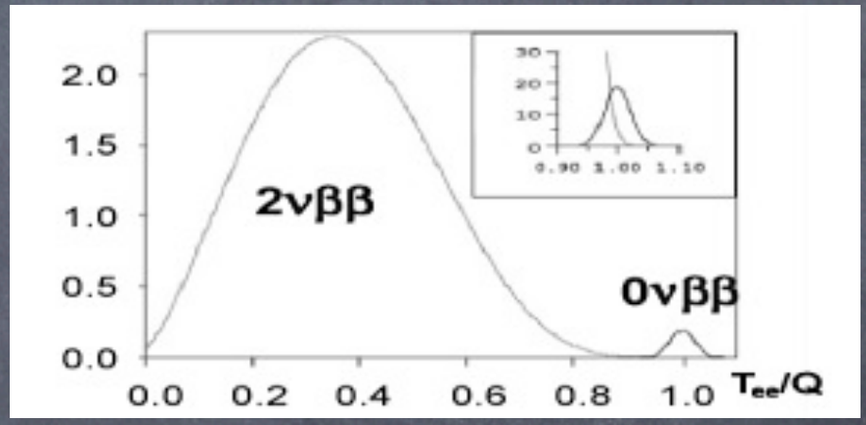
- Participation to CUORICINO/CUORE - Measure of $0\nu\beta\beta$ decays - see Maiano talk (Brofferio, Capelli, Cremonesi, Maiano, Pavan)

The CUORE project



Search for DBD0n of ^{130}Te
~ 1t TeO_2 bolometric detector





Other projects in which some MiB people are involved:
LUCIFER (5 persons) (Tower of ZnSe scintillating bolometers for DBD0n, European Funding)
MARE (3 persons) (electron neutrino mass measurement)
OPERA (1 person)
TELMA (5 persons) Trace Elemental Analysis (NAA, ICP-MS, spectroscopy)
ABSURD (4 persons) R&D on bolometers for surface radioactivity discrimination
ARCO (2 persons) R&D for nuclear reactors
MOSCAB (2 persons) Direct Dark Matter Search (with Geyser detector or bubble chamber)

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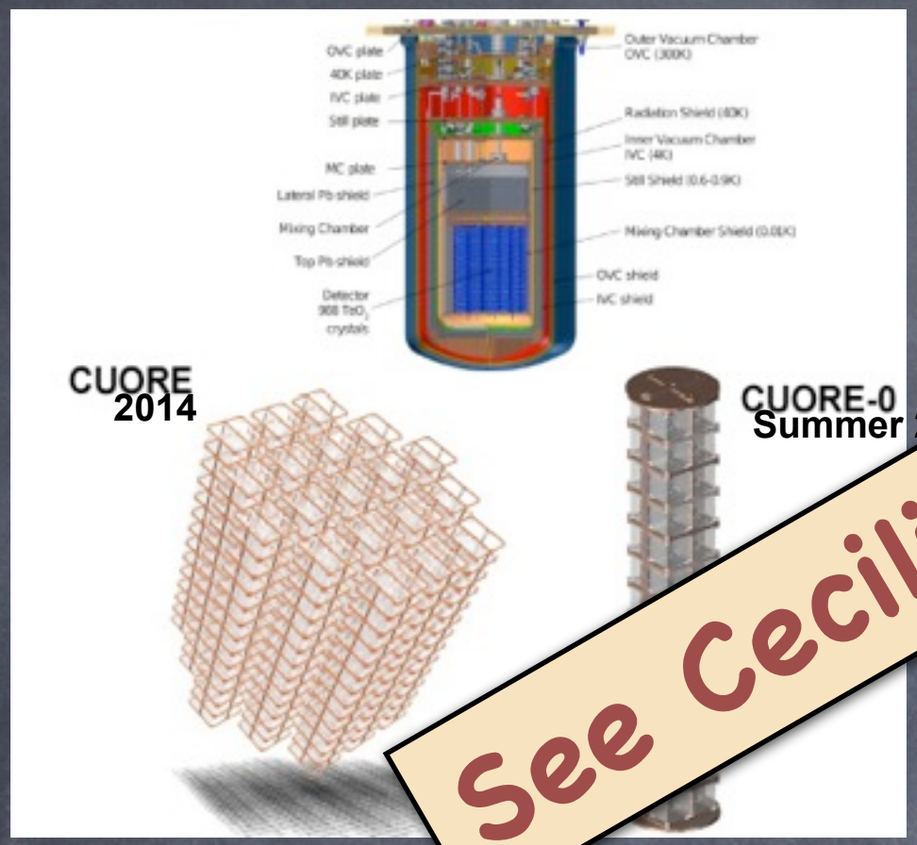

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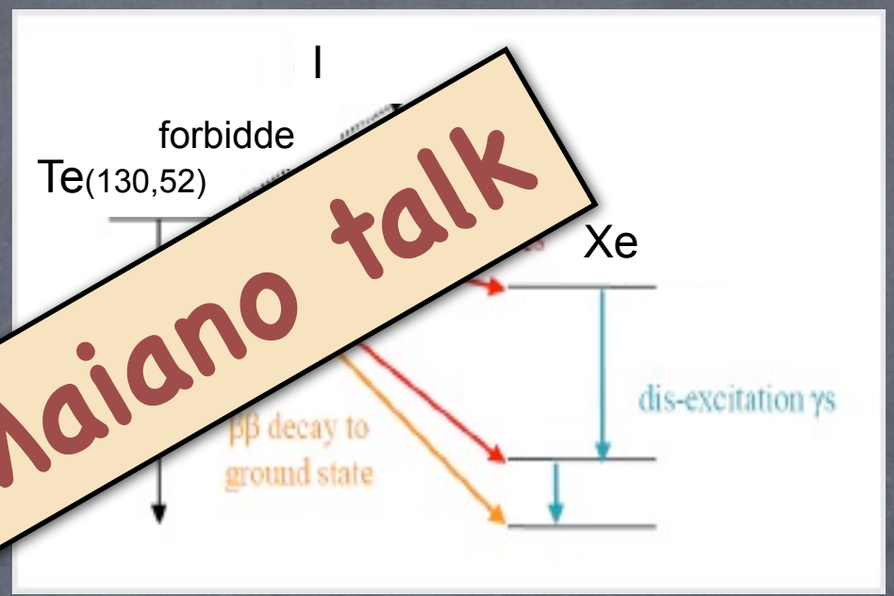

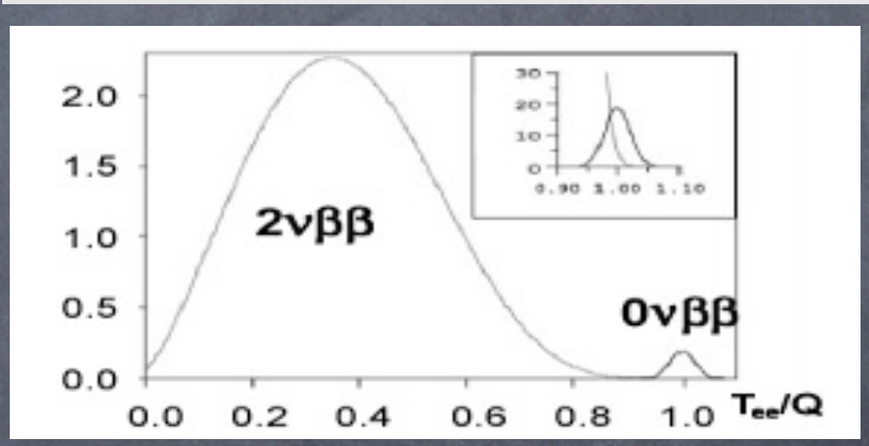

Cecilia Maiano talk

See Cecilia

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See you in Florence

ITN Workshop

24/06-29/06

Thanks to Belen,
Marcia, Milvia, Tiina