FFF Preliminary Meeting

Fisica Fondamentale a Frascati

Agenda:

14.45	E. Nardi	Introduction and Overview
14.50	M. Raggi	Options for PADME phase-2
15.10	L. Darmé	PADME potential reach for Dark Photons & ALPs
15.30	P.Valente	Possible improvements of the LNF e^+/e^- beam
15.50	C. Gatti	Axions @ LNF: QUAX, FLASH, …
16.10	C. Curceanu	Kaons @ LNF: post-SIDDHARTA-2
16.30		"Varie" and discussion

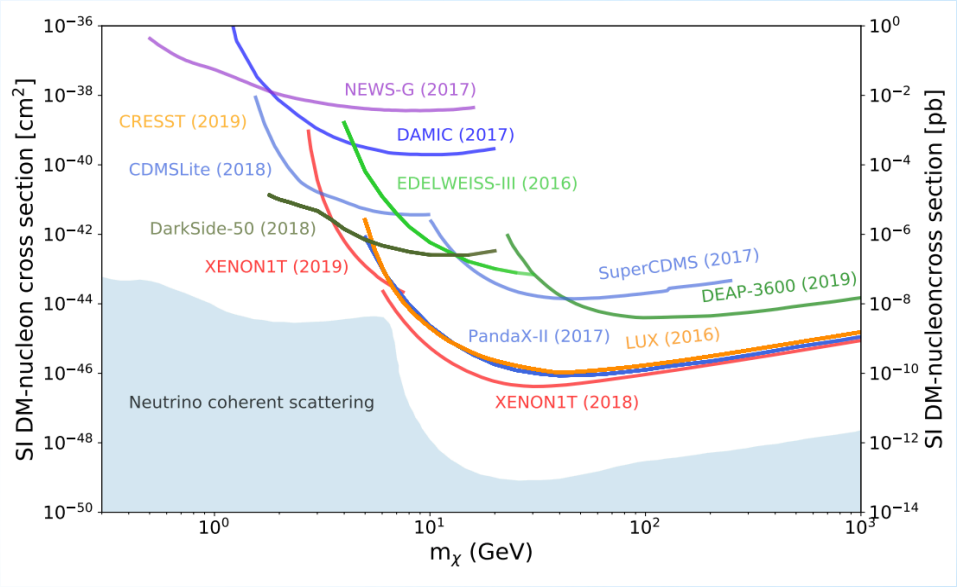
Enrico Nardi

Why FFF ?

- Status of New Physics Searches (mainly @ large scale experiments):

  * LHC (EWSB surprises, SUSY, DM @ colliders …) No new findings

  * DM: LUX/XENON… (WIMPs DM)
    The picture speaks…



- Intriguingly, many anomalies are instead seen in med./small size experiments (& low energy)

  * ^{8}Be & ^{4}He nuclear transitions, $(g\text{-}2)_\mu$, τ_n bottle/beam, $R_p(\mu/e)$, ν-reactor/ν-short baseline. (In many instances *serendipitously*)

- Can this makes sense ?

  High precision/intensity vs. High energy searches are theoretically sound.

  Almost massless particles can `leak down' from very high scale new physics. In particular:

  Gauge bosons (the photon comes from the EW scale) & Pseudoscalars NGB ($m_\pi << \Lambda_{QCD}$)

  (the lighter the particle, the weaker its interactions)

- A Lab like LNF is well suited for mid./small size high sensitive experiments (infrastructure, expertise, …)
  Nobody knows in which way NP will show up.
  A waning of FFF could very well result in missed opportunities

- Proposals for novel strategies for new physics searches at LNF can only come from LNF researches/director (do not expect for it to be commissioned to us by the INFN governancy)

- Feasibility, mid./short time horizons, clear physics case, possible reuse of existing/decomissioned facilities, possible introduction of novel experimental techniques, ...