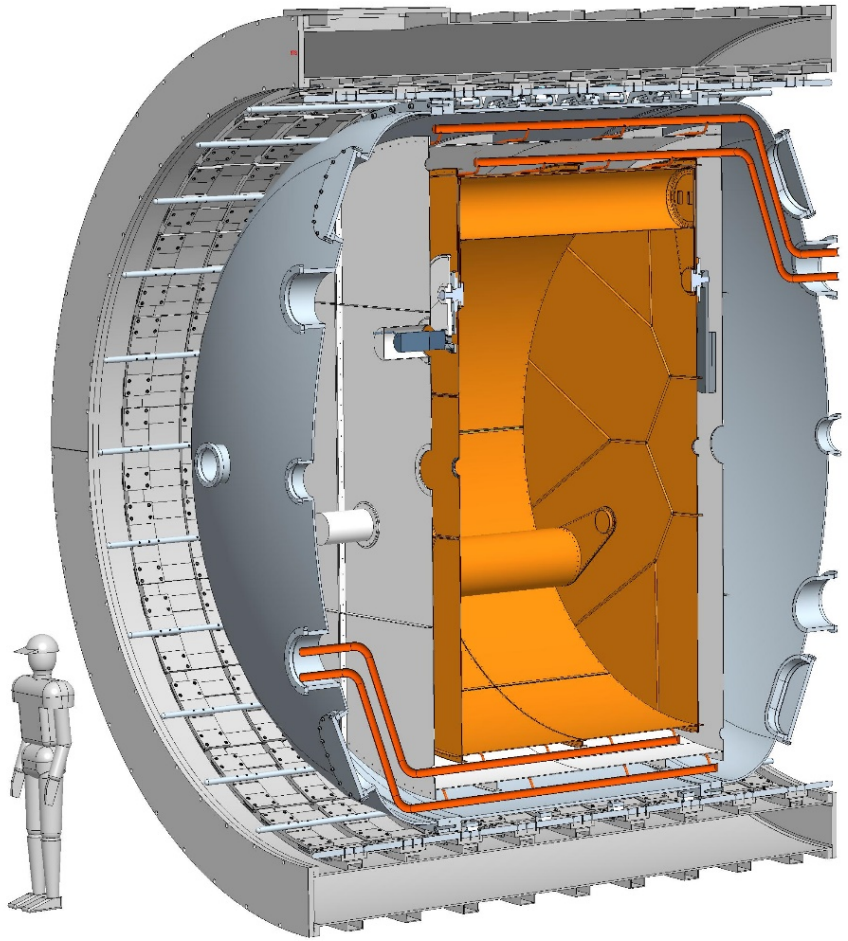
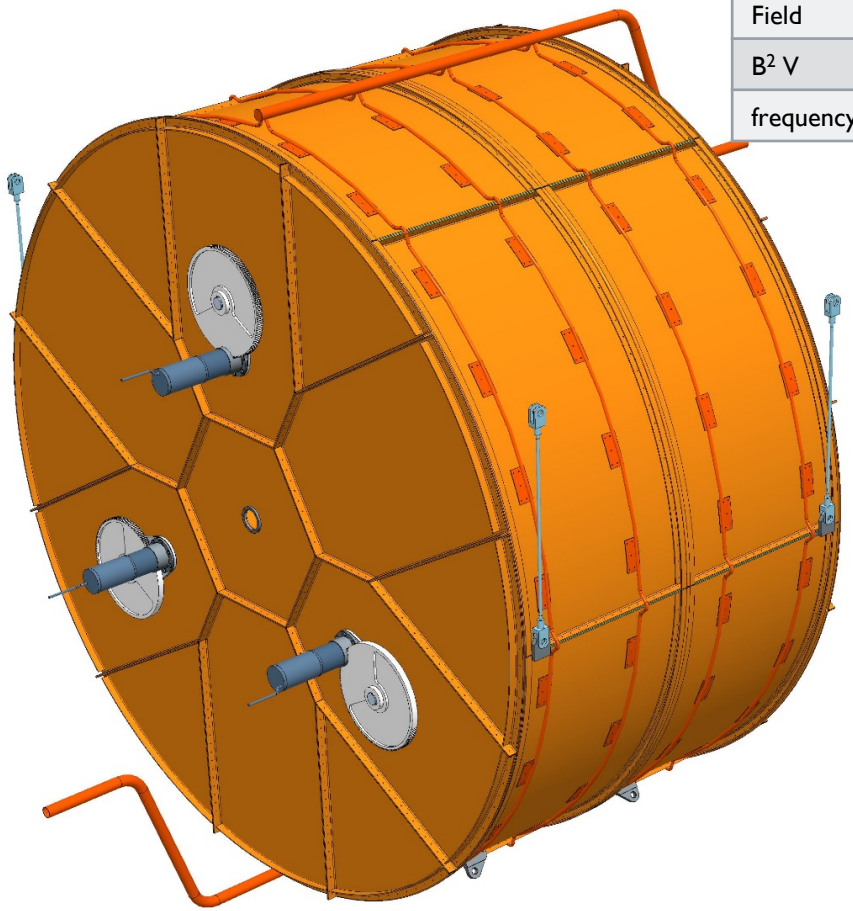
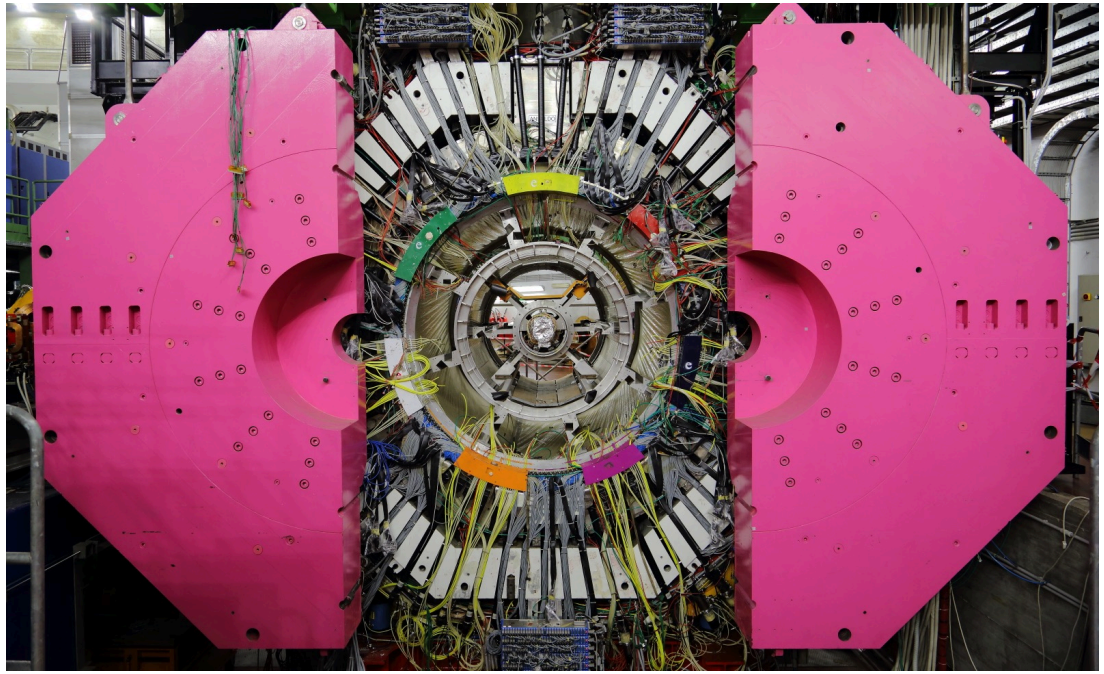


NEXT STEPS FOR FLASH

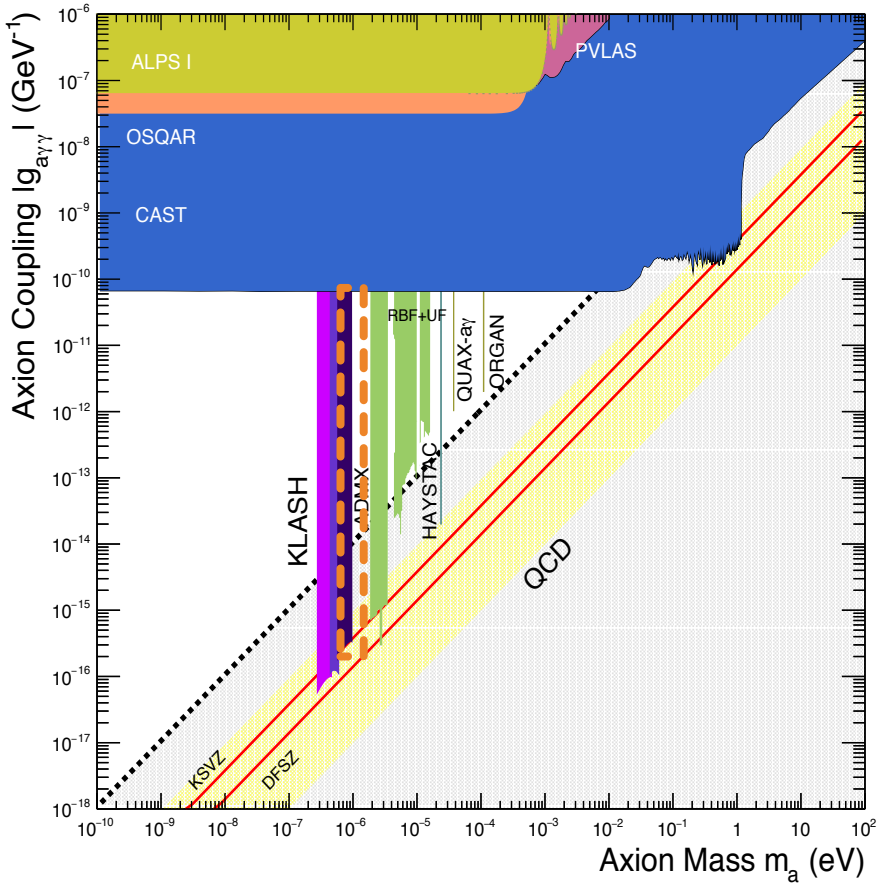
GALACTIC AXION SEARCH AT 100 MHz (0.4-1.2 μeV)

FLASH	
Length	1764 mm
Diameter	2118 mm
V	6.2 m^3
Field	1.1 T
B^2 V	7.5 T^2m^3
frequency	110–270 MHz

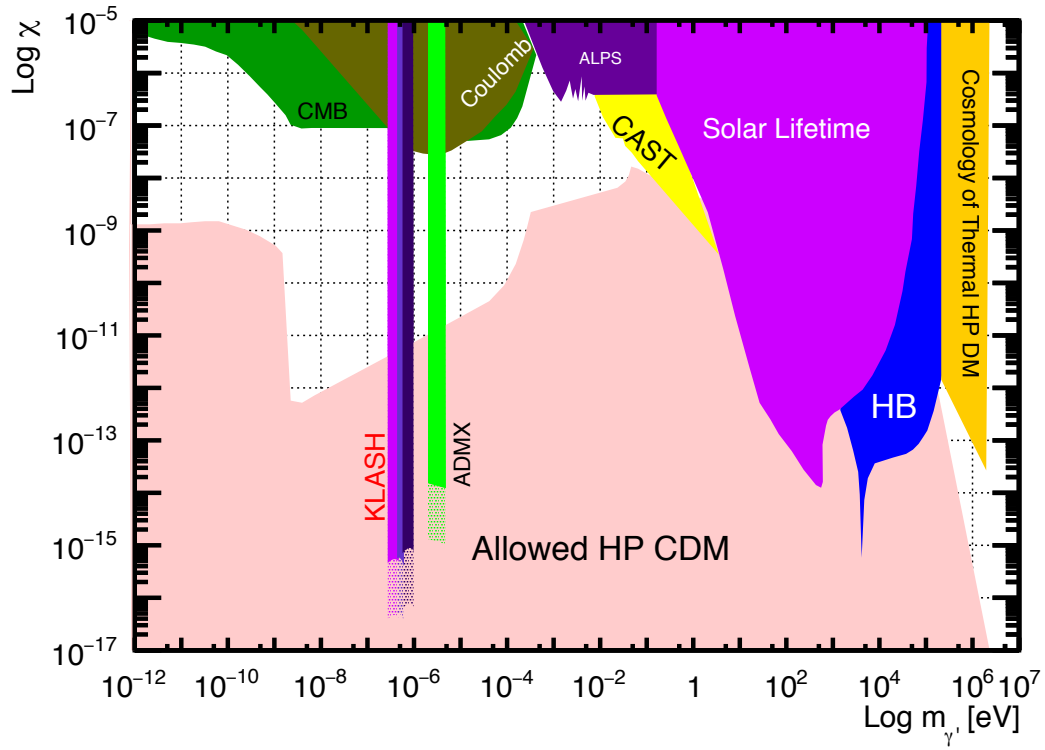


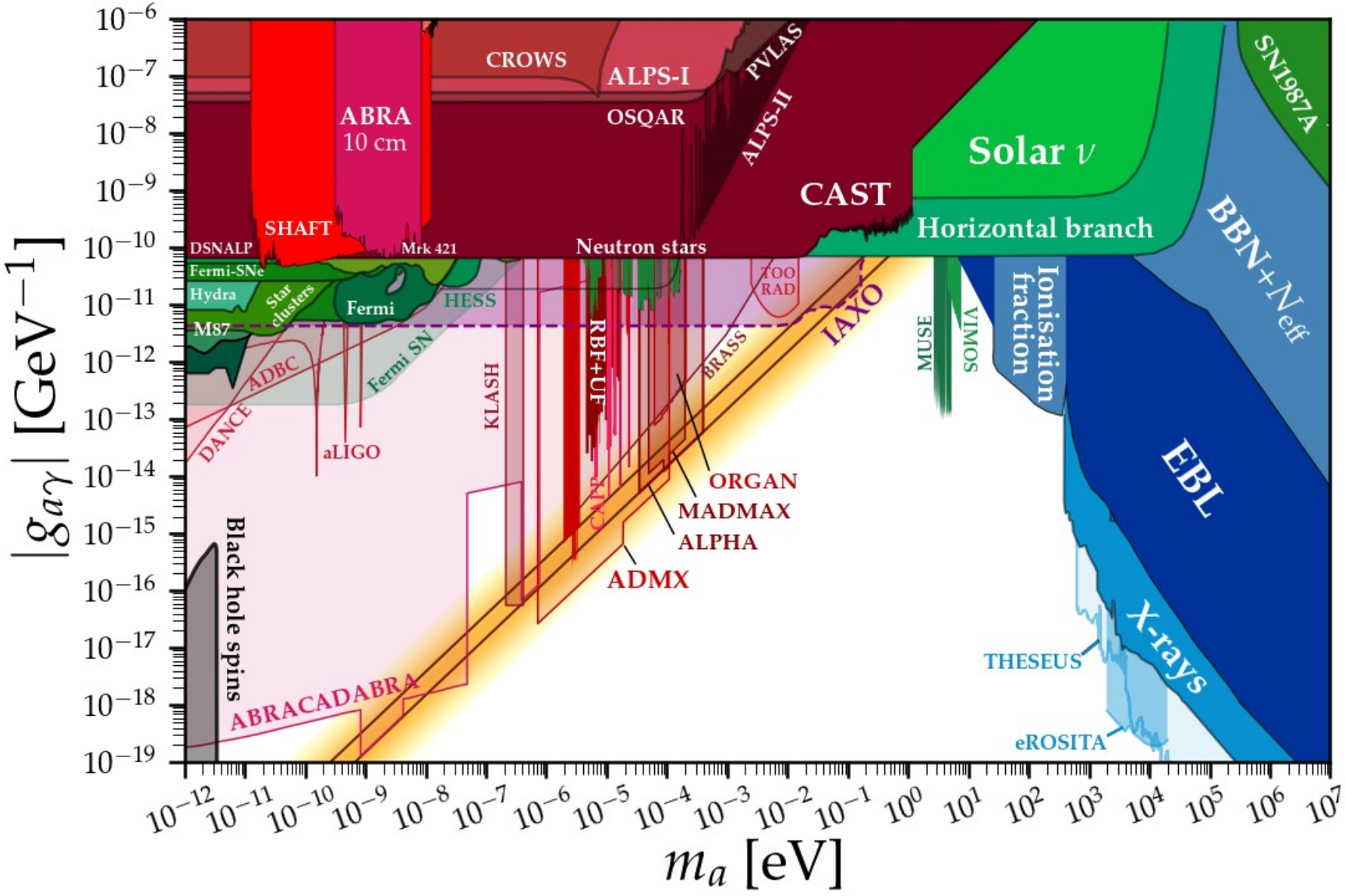


- Expected sensitivity of FLASH



- Dark Photons (KLASH)




CROWS
ALPS-I
PVLAS
ALPS-II
OSQAR
ABRA
10 cm
SHAFT
CAST
Solar ν
SN1987A
Horizontal branch
BBN+Neff
DSNALP
Mrk 421
Neutron stars
Fermi-SNe
Hydra
Star clusters
Fermi
HESS
TOO RAD
IAXO
M87
MUSE
VIMOS
Ionisation fraction
ADBC
Fermi SN
KLASH
RBF+UF
BRASS
DANCE
aLIGO
ORGAN
MADMAX
ALPHA
ADMX
EBL
Black hole spins
ABRACADABRA
THESEUS
X-rays
eROSITA
$|g_{a\gamma}|$ [GeV^{-1}]
m_a [eV]

Mini Workshop on Physics Opportunities at 100-500 Mhz Haloscopes

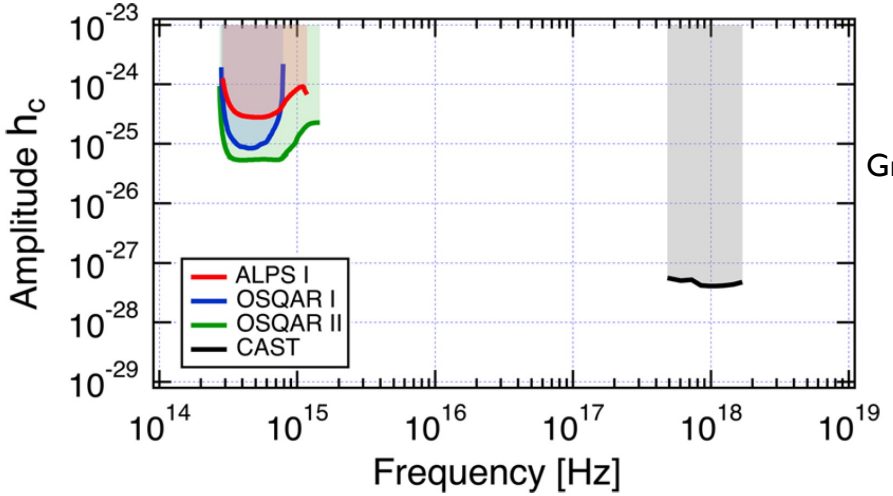
In collaboration with Rades/Baby Yaxo group we are organizing a Mini Workshop on physics opportunities at 100-500 MHz Haloscopes. To be held online between February and March.

Topics:

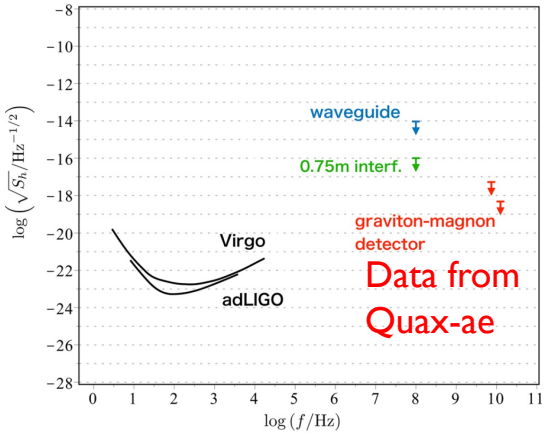
1. Theoretical aspects of Axions at 100-500 MHz
2. The Flash Haloscope
3. The Baby Yaxo Haloscope (Rades group)
4. Other axion searches at low mass (DMRadio, Abracadabra, Casper)
5. HF-GW detection with Axion detectors
6. Cryogenics and Detector

Invitation will be addressed to experimental and theoretical physicists working in the field of axion/alps and GWs, as well as to the community involved in the Physics Beyond Collider studies, with the aim of investigating physics opportunities at O(100 MHz) Haloscopes.

High Frequency Gravitational Waves



Graviton-photon conversion EPJC (2019) 79



Graviton-magnon conversion EPJC (2020) 80

PHYSICAL REVIEW D **104,** 023524 (2021)

Detecting planetary-mass primordial black holes with resonant electromagnetic gravitational-wave detectors

Nicolas Herman,[1,*] André Fűzfa,[1,2,†] Léonard Lehoucq,[1,3,‡] and Sébastien Clesse[4,2,§]

Eur. Phys. J. C (2019) 79:1032
https://doi.org/10.1140/epjc/s10052-019-7542-5

THE EUROPEAN PHYSICAL JOURNAL C

Regular Article - Theoretical Physics

Upper limits on the amplitude of ultra-high-frequency gravitational waves from graviton to photon conversion

A. Ejlli[1,a], D. Ejlli[3], A. M. Cruise[2], G. Pisano[1], H. Grote[1]

Eur. Phys. J. C (2020) 80:179
https://doi.org/10.1140/epjc/s10052-020-7735-y

THE EUROPEAN PHYSICAL JOURNAL C

Letter

Probing GHz gravitational waves with graviton–magnon resonance

Asuka Ito[a], Tomonori Ikeda[b], Kentaro Miuchi[c], Jiro Soda[d]

Department of Physics, Kobe University, Kobe 657-8501, Japan

See also Workshop on "Ultra-High-Frequency GWs: A Theory and Technology Roadmap" https://indico.cern.ch/event/1074510/

FLASH Timeline and Next Steps

2021	2022	2023	2024	2025	2026	2027

Inspection of Finuda

Test of magnet

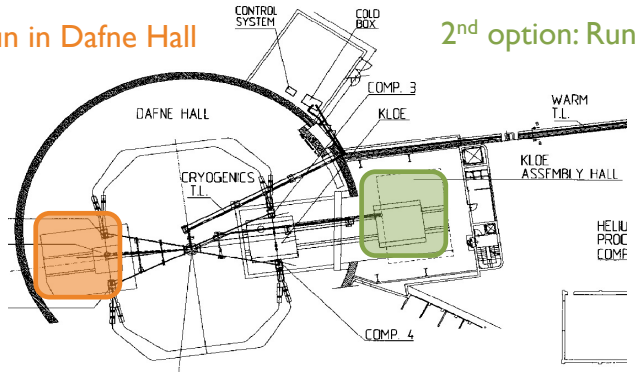
New CDR

TDR (approval)

Construction → Data Taking

1st option: run in Dafne Hall

2nd option: Run in KLOE Hall



1. Preparation of test of the Finuda magnet (contact companies, site inspection, cost evaluation).
2. Contact ASG Superconductors (https://www.asgsuperconductors.com/progetto/finuda) about mode to move the magnet.
3. Refurbishing of the control panel and other hardware parts.

Operating FLASH in Dafne Hall

We received the following comments from the Radiation Protection Expert of LNF on two main scenarios :

1. Access to the Dafne Hall only when no beams are circulating in Dafne
   Easier solution in terms of radiation protection. No particular changes needed for shieldings, control system and authorizations. Limited access to the detector. Impact on noise induced inside the detector or on the electronics must be evaluated.

2. Access to the Dafne Hall with beam accumulated in Dafne
   Full access to the detector and no concern about induced noise. It requires new shieldings, new access control system and new authorizations (estimated time 2 years).