

Two prime objectives of the efforts are: (i) to **reach sensitivity to detect the QCD axion** as a highly motivated DM candidate, and (ii) to **explore the widest possible ranges of axion and ALP masses**, from 10^{-13} eV (for ALPs even lower) up to 10 eV

European-led teams have obtained some **very promising R&D results** that put them in a leading position to set up new and unique experiments directly probing the so far unexplored mass ranges between 20 eV and 10meV as well as below 1 neV for dark matter.

Benefit of support of large European and national labs was **demonstrated**, e.g., by the CAST and OSQAR experiments at CERN and ALPS at DESY.

Novel approaches, e.g., ALPS II, babyIAXO and MADMAX to be located at **DESY Hamburg** ... as well as the other promising **smaller scale European haloscope projects** ... **will complement the presently leading experiments** being performed

In parallel, **R&D efforts towards proving the applicability of some key novel technologies**, ... as well as **experimental demonstration of new conceptual ideas** in all mass ranges relevant for axion and ALP dark matter **should be supported...**

This would also prepare the ground for **axion astronomy** in case of detection

Recommendation 6: Axion/ALP experiments



European-led efforts should

focus on axion and ALPs mass ranges that are **complementary to the established cavity approach**



and this is where **European teams** have

a **unique opportunity to secure the pioneering role**

in achieving sensitivities **in axion/ALP mass ranges** not yet explored by experiments conducted elsewhere.

In parallel, **R&D efforts to improve experimental sensitivity** and to extend the accessible mass ranges should be supported.

Discussion axions:

- **Any other examples for synergies?**
- **Axion community: profit from technologies being developed for other purposes → Synergies: how to exploit them, how can APPEC help?**
- **Fostering connection btw. basic research and industry in mutual interest, how to do that?**
- **Contact to theory → especially fruitful & important for axions/ALPs**