



COSMIC WISPer

WG2 Kickoff Meeting

Nick Rodd & Javier Redondo

3 February 2023

Outline

- **What is the COST action?**
- **What is the plan for Working Group 2?**
- **What are your thoughts?**

COST: Big Picture

Bring together European WISP researchers to coordinate future directions and forge new research topics

In detail: 4 years of funding (~500,000€ total), for

- Yearly workshop
- Topical meetings
- Training Schools
- Short Term Scientific Missions: individual visits to an institution
- Participation of junior scientists in conferences
- Outreach activities
- Virtual meetings, seminars, or related activities

COST: Activities

Online activities:

- Working group meetings (more on ours later)
- Monthly Journal Club: Feb 7, 3.30pm CET
- Monthly Colloquia: first was Wednesday this week

First in person activity (more to follow):

- **Kickoff meeting Frascati, Feb 23-24**
- Please register and attend if you can
- Will be a number of talks from each WG, and a technology forum on the topic of “High Magnetic Fields for WISP Searches”
- <https://agenda.infn.it/event/33570/>

COST: Organization

Leader: Alessandro Mirizzi

Working Groups

Number	Title
1	WG1: WISPs Model Building
2	WG 2: WISPs Dark Matter and Cosmology
3	WG 3: WISPs in Astrophysics.
4	WG4: Direct WISPs searches.
5	WG 5: Dissemination and Outreach

COST: Organization

Leader: Alessandro Mirizzi

Working Groups

Number	Title
1	WG1: WISPs Model Building
2	WG 2: WISPs Dark Matter and Cosmology
3	WG 3: WISPs in Astrophysics.
4	WG4: Direct WISPs searches.
5	WG 5: Dissemination and Outreach

Working Group 2: Overview

Stated objective: Obtain precise predictions of axion and WISP DM relic abundance, and identify distinguishing features of WISP DM in Large Scale Structure data.

Working Group 2: Overview

Stated objective: *Obtain precise predictions of axion and WISP DM relic abundance, and identify distinguishing features of WISP DM in Large Scale Structure data.*

Practical goals:

- Bring together experts thinking about WISP dark matter and cosmology with a view to accelerating existing research directions, creating new directions, and identifying the main bottlenecks to progress on both
- Generating a draft [year 1], interim [year 2], and final [year 4] summary report on WISPs and cosmology
 - *If you are interested in contributing, please reach out*

WG2: Moving forward

Initial plan for WG2:

- Establish a discussion forum
- Organize focussed meetings on specific topics

WG2: Discussion Forum

Establish a discussion forum:

- Ideally on slack (otherwise skype)
- Draw on the wide expertise in the WG to:
 - Discuss recent papers
 - Solicit thoughts on various topics

WG2: Focussed Topics

Focussed meetings on specific topics, for instance:

- What lattice results would further our understanding of WISP dark matter? (*Thank you Maria Paola for the suggestion*)
 - E.g. improved temperature dependence of m_a
- Important next steps towards an accurate computation of m_a for post-inflation PQ symmetry breaking
- With dramatic improvements to our LSS data, what needs to be done to determine if there is any signal from WISP DM?
- ...

Your thoughts

How should we get the most out of the opportunity COST is providing us?

Javier and I are very open to suggestions raised now, or sent to us over email