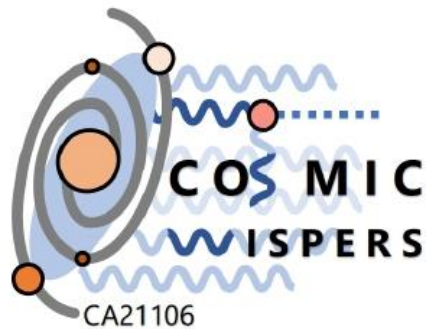


WG1 Report

Sophie Renner and Michele Cicoli

2nd General Meeting COSMIC WISPers, 4 Sept 2024



Funded by the
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WG1: Main goal

Tasks:

- Coordinate **theory advances** and promote **knowledge exchange**
- Give **theoretical guidance** to experiments
- Determine nature, number, masses and couplings of **WISPs** with applications to particle physics, cosmology and astrophysics via **2** complementary approaches:

1) **Bottom-up**: indication of **WISP** models promising for pheno

UV scenarios compatible with observations



phenomenology in low-energy effective field theory

2) **Top-down**: restrict **WISP** models from UV consistency (string theory)

UV complete model building



UV constraints on WISP properties


WG1: Organisation

- Leader: Michele Cicoli (Bologna) michele.cicoli@unibo.it
- Co-leader: Sophie Renner (Glasgow) sophie.renner@glasgow.ac.uk
- Google group “CosmicWISPers WG1”:
<https://groups.google.com/g/cosmicwispers-wg1/>
- 102 members so far
- Mailing list: cosmicwispers-wg1@googlegroups.com

WG1: Activities during year 2

- Contributions to **organisation**:
 - i) Working group Meeting, 1-2 Feb 2024, Hamburg
 - ii) 2nd Training School, 11-14 Jun 2024, Ljubljana
 - “Axion theory”, Lecturer: G. Villadoro (ICTP, Trieste), Trainer: R. Petrossian-Byrne (ICTP)
 - iii) 2nd General Meeting, 3-6 Sep 2024, Istanbul
 - Plenary: A. Westphal, J. Leedom, M. Raidal, F. Pedro
 - Parallel: A.Sokolov, N.Righi, G.Villa, A.Racioppi, L.Brunelli, A.Schachner, C.Eroncel, A.Maharana, B.Pulice
- **Outreach talk**: “The infinity, the electron and the string”
Michele Cicoli, Occhialini Foundation, 5 April 2024, Pesaro (Italy)
- **Monthly WG1 meetings**:
 - i) Online via Zoom on Mondays at 2pm CET
 - iii) Duration: 1 hour: 30 minute talk by an invited speaker + 30 minute discussion
- **Joint meeting** with other WGs on “Non-axionic solutions of the strong CP problem”, 27 May 2024
 - i) Two invited speakers: Arsenii Titov, Carlos Tamarit
 - ii) Duration: 20 minute talks by each speaker + 30 minute discussion
- Contribution to writing up of **White Paper**
 - i) WG1 Editors: A. de Giorgi, N. Righi, M. Reig Lopez
 - ii) WG1 chapter: Low-energy WISP models from string theory, WISP model building in QFT, WISP EFT
- **STSM**: Gonzalo Villa from Cambridge to Bologna

WG1: Future activities

- Contributions to **organisation** of meetings and training schools
- **Dissemination** talks at major conferences and **outreach** activities
- Monthly WG1 **meetings**:
Same format for year **3**: topical discussions, invitation of external speakers, recent papers...
- More **STSM**: please apply!
- In year **3**: organise a **2/3-day WG1 workshop** in person (in Bologna?)
focused on a specific topic: axions? hidden photons? dark sector physics?
- Deliverables:
 - i) **talks** at major conferences and workshops
 - ii) **publications** on top refereed journals
 - iii) contribution to the writing up of **white paper** and **scientific reports**
 - iv) increase **interactions with other WGs**
 predictions from UV motivated classes of models superimposed on exclusion plots
- Suggestions!