

MP3
MULTI-PETAWATT PHYSICS PRIORITIZATION WORKSHOP
April 20-22, 2022
Sorbonne Université (Paris, France)

Tuesday, April 19

TBD Optional visit to Apollon Laser Facility

Wednesday, April 20 Report WG Findings and Recommendations

09:00 – 10:00 **Opening Plenary Session**

10:00 – 10:15 Break

10:15 – 11:45 **Plenary W1* – Highest energy phenomena in the universe**

SQ1A – What are the physical mechanisms that produce the most energetic particles and brightest events in the universe?

SQ1B – How does light transform into a plasma fireball composed of matter, antimatter and photons that constitute a significant portion of the universe?

Tom Blackburn (U. Gothenburg) + Dmitri Uzdensky (Colorado SU),
HFP/QED WG co-leaders)

Mattias Marklund (Swedish Research Council, Secretary General for
Natural and Engineering Sciences), invited speaker

11:45 – 12:00 **Workshop photo**

12:00 – 13:30 **Working lunch with keynote speaker**

13:30 – 15:00 **Plenary W2* – The origin and nature of space-time and matter in the universe**

SQ2A – How do complex material properties and quantum phenomena emerge at atomic pressures and temperatures relevant to planetary cores?

SQ2B – How might an equivalence between gravity and laser-based acceleration enable studying black hole thermodynamics?

SQ3B – How does the electromagnetic force behave under extreme conditions?

Gianluca Gregori (Oxford), LAPP WG co-leader

Luis Silva (IST, Lisbon), invited speaker

15:00 – 15:30	Break
15:30 – 17:00	<u>Plenary W3* – Nuclear physics and the age/course of the universe</u> <i>SQ3A – How might laboratory nuclear physics experiments studies inform understanding the age of the universe?</i> <i>SQ3B – Why do some massive stars proceed to type-II core collapse supernova while others form black holes?</i> Klaus Spohr (ELI Nuclear Physics), LDNP WG co-leader Norbert Pietralla (TU Darmstadt), invited speaker
17:00 – 17:30	Plenary W4 – Summary and Announcements
18:30 – 20:00	Conference Banquet
* WG leader(s) summarize MP3 white papers and resulting SQs	

Thurs, April 21	Distill and Synthesize Science Questions
09:00 – 09:30	Plenary Th1 – Chairs summarize Day 1 and charge breakout groups
09:30 – 12:00	SQ Breakout Sessions: Roadmap SQ
12:00 – 13:30	Working lunch, continue SQ breakout sessions
13:30 – 15:00	SQ Breakout Sessions: Identify critical SQ needs
15:00 – 15:30	Break
15:30 – 18:00	continue SQ Breakout Sessions
18:00 – 19:00	MP3 “Happy Hour” Reception – Sorbonne Tower (not dinner)
Fri, April 22	Finalize workshop report
09:00 – 09:30	Plenary F1 – Chairs summarize Day 2
09:30 – 11:00	Plenary F2 – Panel discussions on visions for next-generation capabilities
11:00 – 12:00	Plenary F3 – Closing Remarks
12:00 – 17:30	MP3 Organizing Committee markup draft workshop report
TBD	Optional visit to Apollon Laser Facility