



Beyond Standard Model: From Theory to experiment

November 6 – 9, 2023

Hurghada, Egypt

BSM 2023

Prof. Shaaban Khalil



WELCOME

- We are delighted to welcome you to BSM 2023, our 3rd International Conference on high-energy physics.
- In the spirit of collaboration, we have gathered global experts and researchers.
- Your presence enriches this conference and enhances our shared commitment to advancing the frontiers of high-energy physics.
- Prepare for an inspiring journey into beyond the standard model research.
- Together, we'll explore, exchange ideas, and shape our field's future.
- Thank you for being part of us the event; we anticipate an unforgettable BSM 2023 experience.




BSM 2023: The 3rd BSM Conference in Egypt

Hosted by: Zewail City and South Valley University

Organized by: The Journal of "Letters in High Energy Physics (LHEP)"

Acknowledgments: We extend our gratitude to the dedicated team at Andromda Publishing, the proud host of the LHEP Journal, for their invaluable support in making this conference possible.





Agenda Highlights

1. Conference Schedule Overview:

- The conference runs from 9 am to 7 pm, spanning Monday, 6th to Thursday, 9th (to accommodate all eligible talks submitted by participants).
- No parallel- sessions, to ensure everyone can listen to all talks.

2. Keynote Speakers:

We are honored to feature esteemed High Energy Physicists as our keynote speakers, including Nobel Laureate Prof. Takaaki Kajita, Prof. Pran Nath, invited speakers from ATLAS and CMS, and many more as detailed in the schedule.

3. Social and Networking Events:

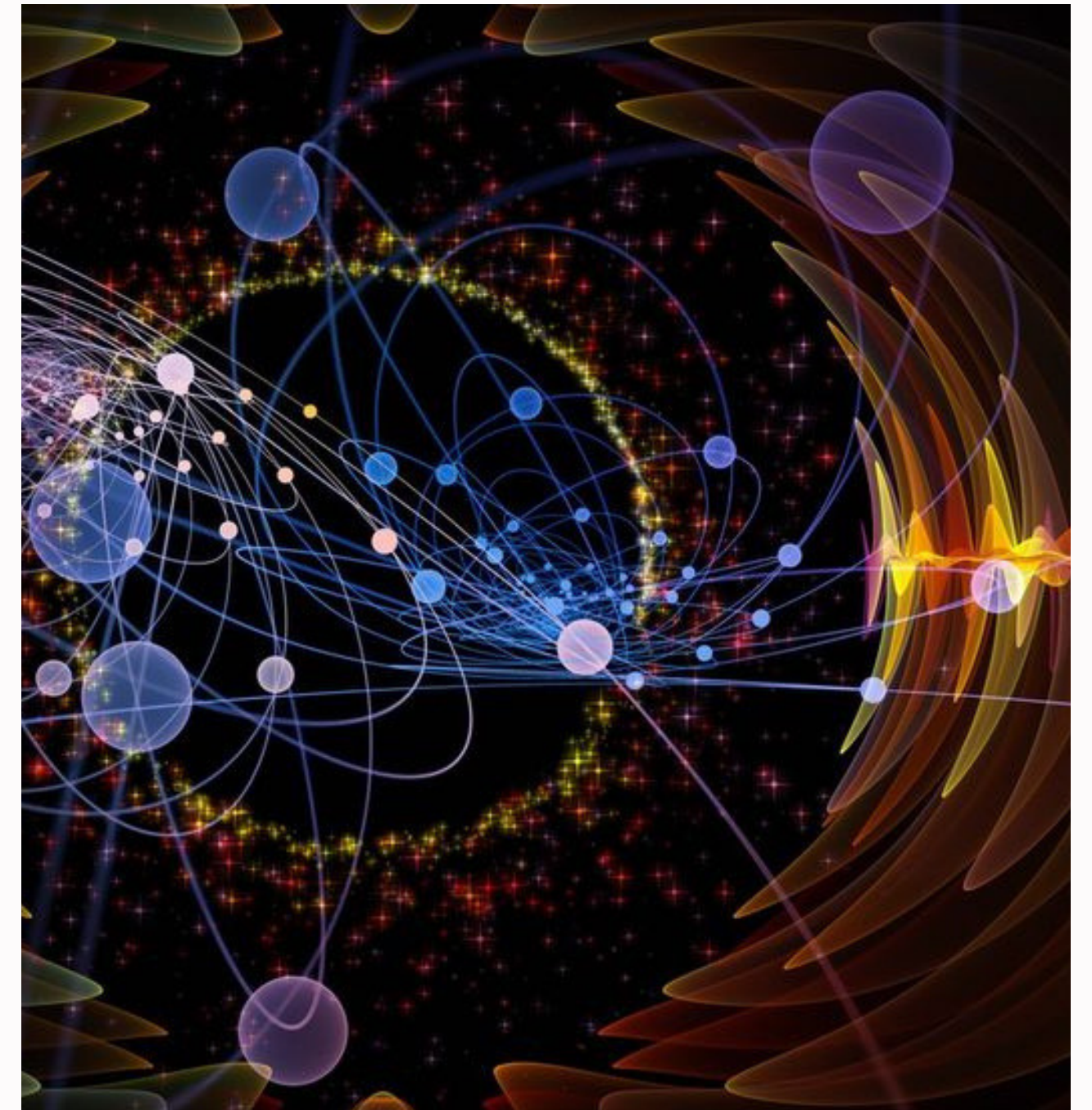
Post-Conference Excursion: Luxor, the World's Biggest Open-Air Museum



SM of Particle Physics

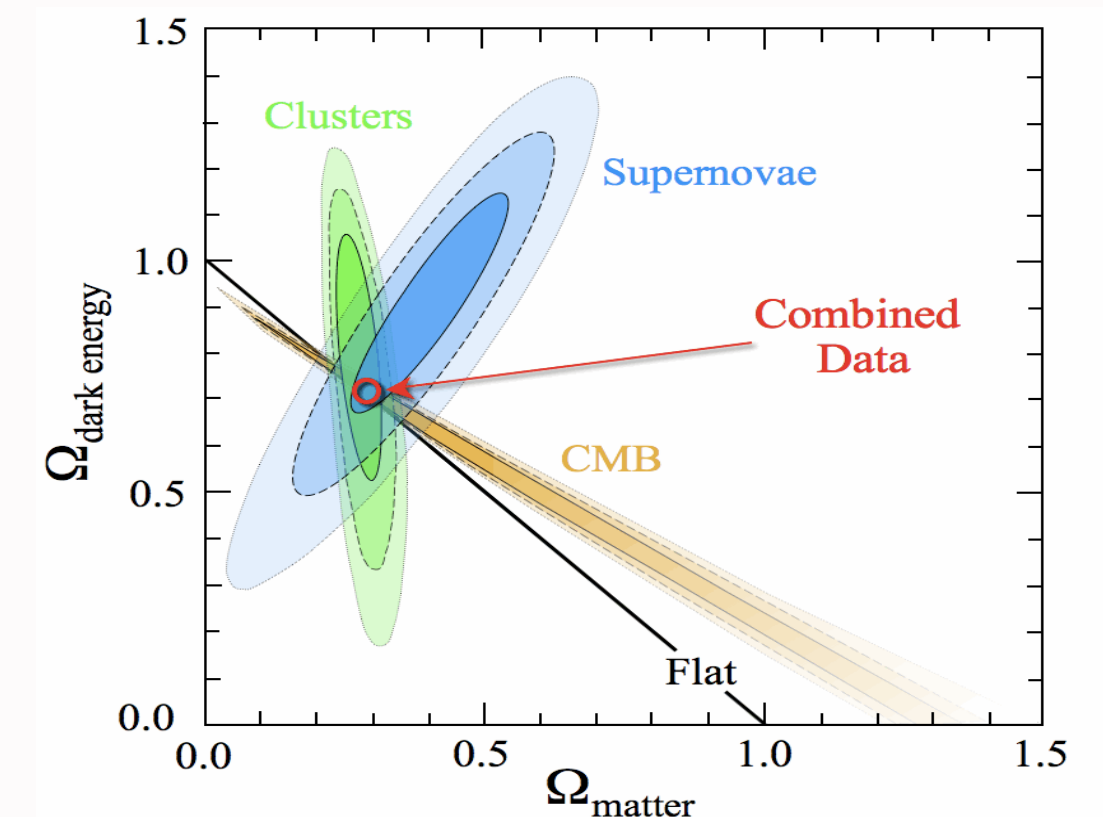
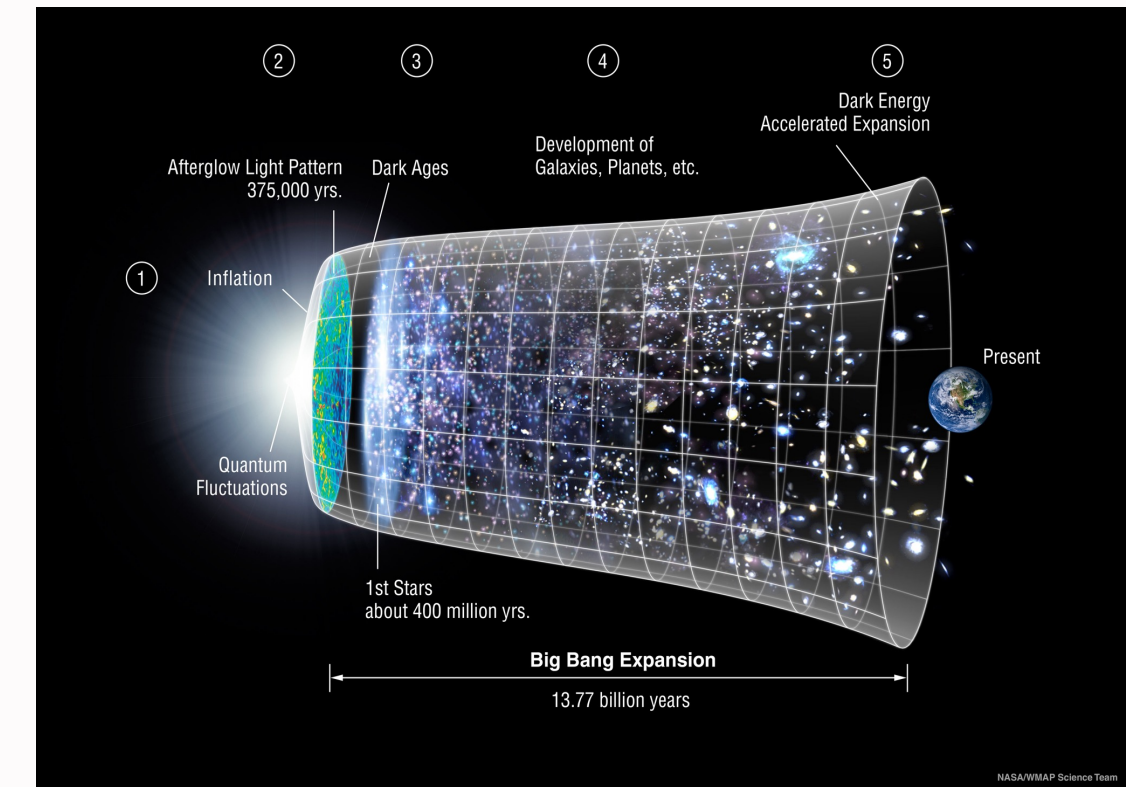
SM of particle physics is defined by

- 4-dimension QFT (Invariant under Poincare group)
- Symmetry: Local $SU(3)_C \times SU(2)_L \times U(1)_Y$
- Particle content (Point particles)
- 3 fermion (quark & Lepton) Generations
- No Right-handed neutrinos \rightarrow Massless Neutrinos
- Symmetry breaking: one Higgs doublet
- No candidate for Dark Matter
- SM does not include gravity.



Standard Model of Cosmology

- The SM of Cosmology describes the large-scale structure and evolution of the universe.
- It is primarily based on the principles of GR & Cosmological Principle
- The model incorporates the theory of the Big Bang, which postulates that the universe originated from a hot and dense state.
- The SM of Cosmology assumes that the universe was created in the "Big Bang" from pure energy, and it is now composed of approximately:
 - 5% ordinary matter (baryons and electrons),
 - 27% dark matter,
 - 68% dark energy.



Beyond the SMs

- The SM of Particle Physics and Cosmology have achieved successes in theory and experiments.
- There is evidence suggesting these models are incomplete and have limitations.
- They fail to explain fundamental questions such as dark matter, dark energy, cosmic inflation, the unification of quantum mechanics and general relativity, and the nature and implications of gravitational waves.
- Observational evidence, such as the existence of dark matter and the accelerating expansion of the universe, challenges the current models
- Particle/astro physicists and cosmologists are actively exploring new theories and conducting experiments to address these limitations and expand our understanding of the universe.

**THANK
YOU**