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Ultra-heavy nuclei and ultra-high-energy cosmic rays [10'+5']

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Thanks to the experimental advancements in the field of ultra-high-energy cosmic rays (UHECRs), recent results about their mass composition indicate that, as the energy increases, the mean mass of these nuclei first decreases, reaching its lightest point around 2 EeV, and then afterward, increases significantly.

These results motivated several studies for modelling the interactions suffered by UHECR particles in their travel from the sources to the edge of the Milky Way, to compute the nuclear cascades induced by their interactions with the background photons in the extragalactic space.

Nuclear species with atomic mass A<=56 are treated in the most common codes used in the UHECR community to simulate the extragalactic propagation. In this talk, I will motivate why heavier nuclei should be considered as well, in the light of the highest energy events detected at the UHECR observatories. In addition, I will discuss how to possibly include the corresponding cross sections in SimProp, a simulation code for the simulation of UHECR interactions in the cosmic microwave background and extragalactic background light.

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