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Particle Physics at LPTHE

Mardi 18 Septembre 2018, 14 :00
LPTHE, Library
Domaines : hep-ph

Titre : *Towards EeV Astronomy : catching the sources of ultra-high-energy cosmic rays*

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Résumé : *The violent Universe still defies us, as the sources of ultra-high-energy cosmic rays remain unknown. Yet we have drastically increased the amount of information at very high energies in the last 5 years, with combined observations of cosmic rays, gamma rays, neutrinos, and gravitational waves. We will identify in this talk the multi-messenger data that can be relevant to solve this long-standing mystery, and compare them with the signatures predicted for the most promising source scenarios. For this purpose, we will recall the fate of primary cosmic rays in the source environment and in the intergalactic backgrounds during their flight to the Earth, and estimate their associated astroparticle emissions. We will give theoretical grounds and experimental prospects for successfully launching EeV Astronomy in the next decades. This would likely happen with the collection of hundreds of ultra-high-energy neutrinos, thanks to global multi-messenger networks and with ambitious high-sensitivity high-resolution experiments such as GRAND.*