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Dark matter: the hunt for the unknown

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Astronomical and cosmological observations strongly suggest that most of the matter in our Universe is non-luminous and made of an unknown substance called Dark Matter. But, currently, it remains invisible and undetectable directly on Earth and makes it one of the greatest mysteries in particle physics. Even if its direct detection escapes to the scientific community in our time, dark matter remains a fundamental concept that would explain how our Universe was formed and offer a unique chance to discover physics beyond the Standard Model.
Currently, many worldwide experiments are searching for dark matter to solve this mystery and understand its properties. After presenting how we can detect it directly, I will give an overview of the numerous experimental dark matter searches and the challenge we are now facing by reaching such an unprecedented level of sensitivity that never-before-seen background signals have to be considered.

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